Community Path Feasibility Study

School Street to Cambridge Line

City of Somerville
Mayor's Office of Strategic Planning & Community Development
April 6, 2006

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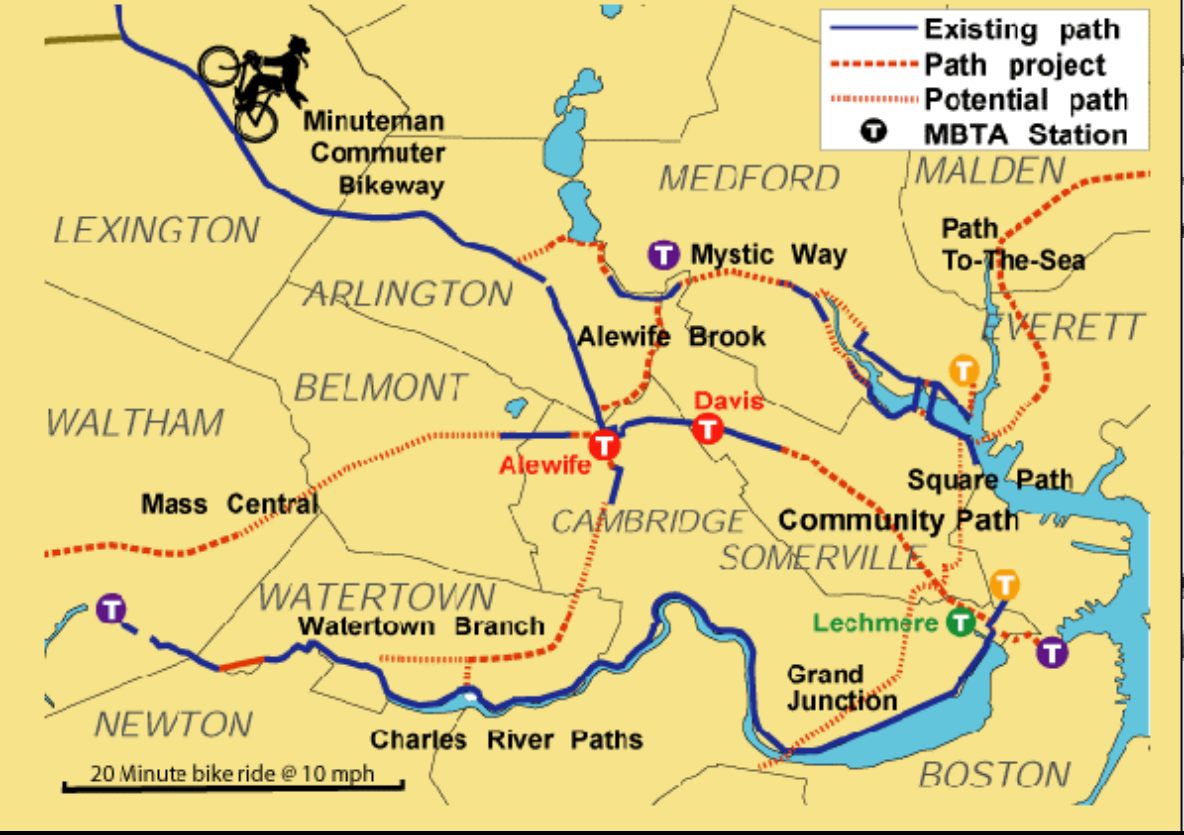
Presentation Outline

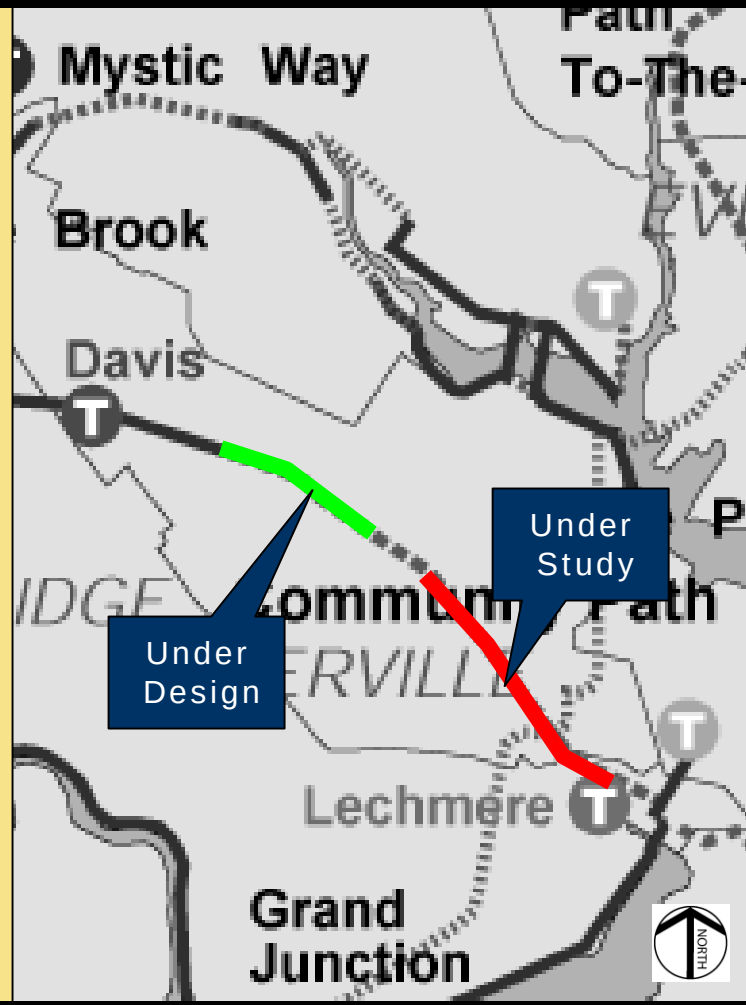
- Project Overview
- Project Segments / Alternate Alignments
- Project Components
- Alternative Analysis
- Questions

Project Overview

- Project Context
- Previous Feasibility Study
- Project Locus

Project Context





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Existing Path Images

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Existing Path Images

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Existing Path Section

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Previous Feasibility Study

- Two public meetings held in January 2001
- Study finalized May 2001
- Conclusions
  - Strong community interest in the development of a separate trail
  - Recommended development of path along west side of railroad
  - Develop new retaining walls that allow path

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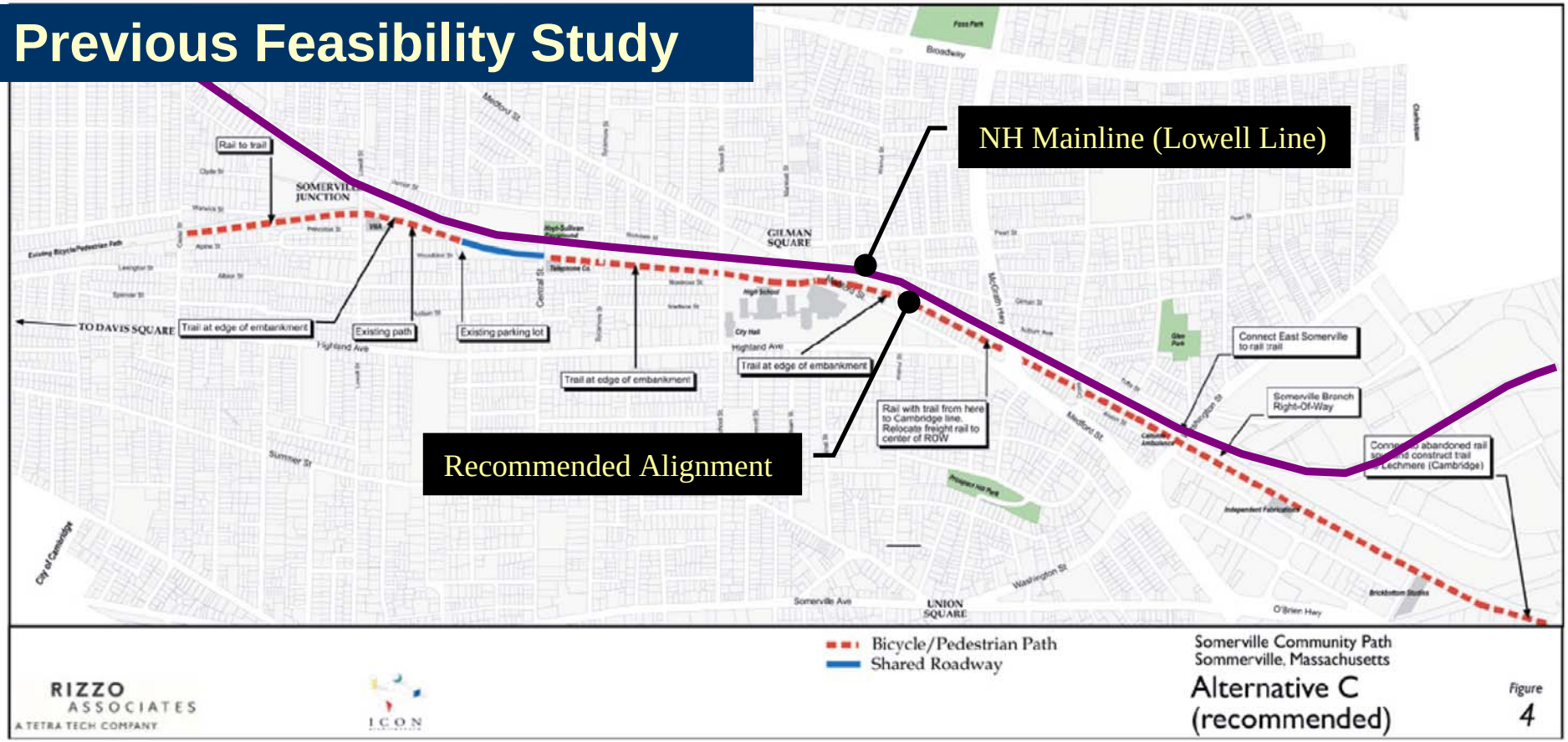
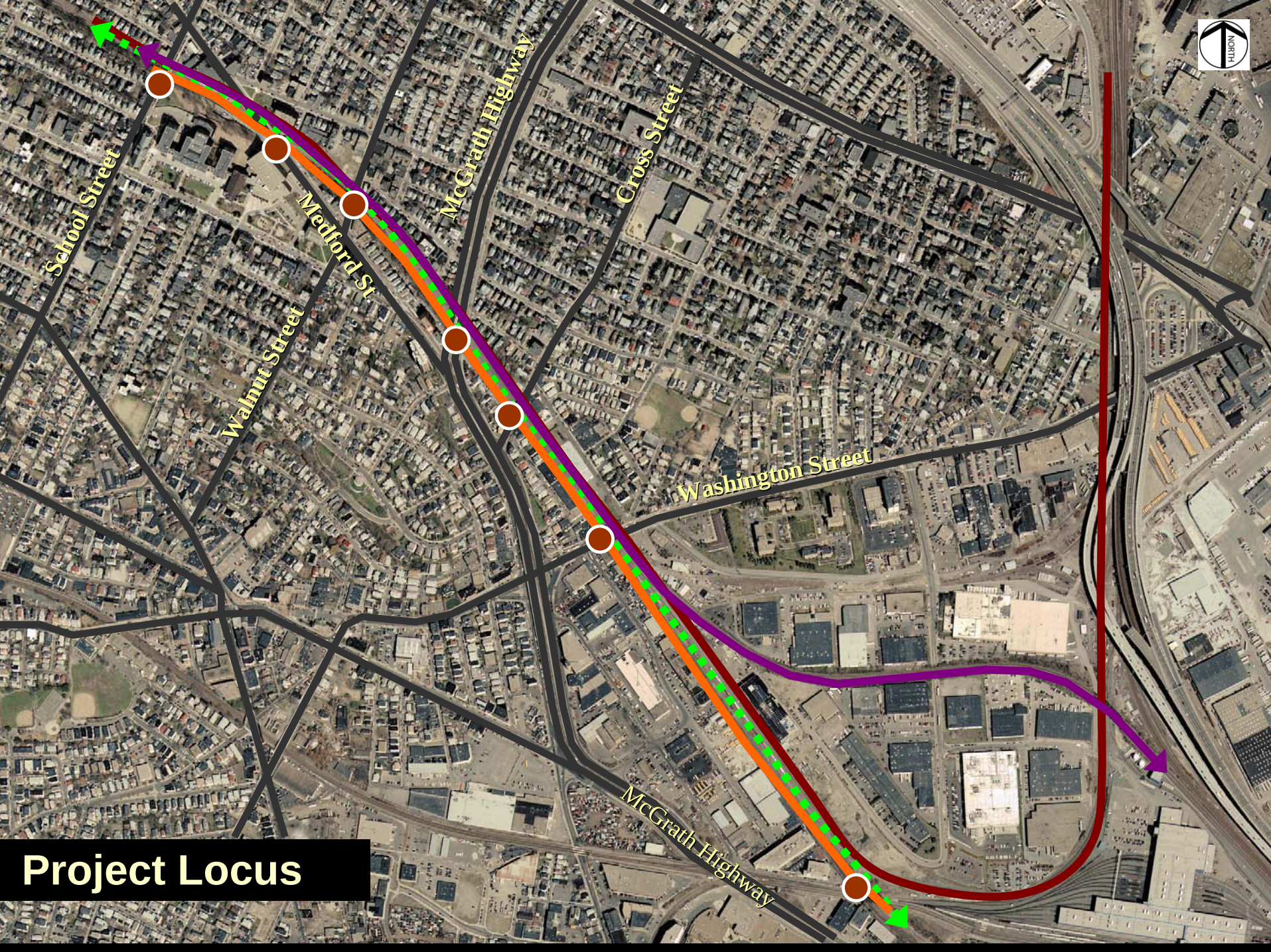
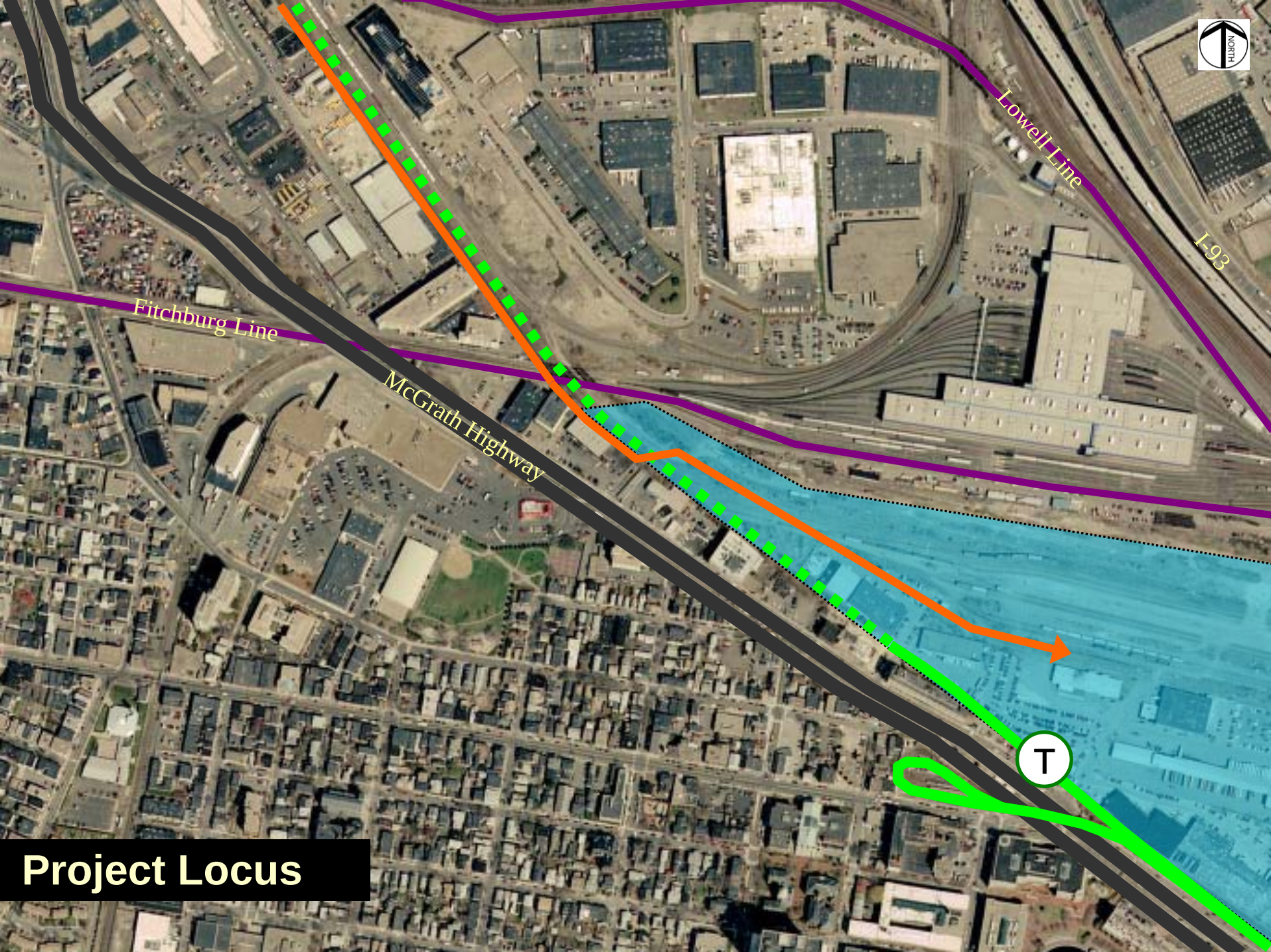
Previous Feasibility Study





Project Locus


Lowell Line
I-93
Fitchburg Line
McGrath Highway
T
NORTH
Project Locus

Project Segments / Alternate Alignments

- School Street
- Medford Street
- Walnut Street
- McGrath Highway
- Cross Street
- Washington Street
- Fitchburg Line

Existing Conditions

- 7 Corridor Segments
- 7 Major Crossings

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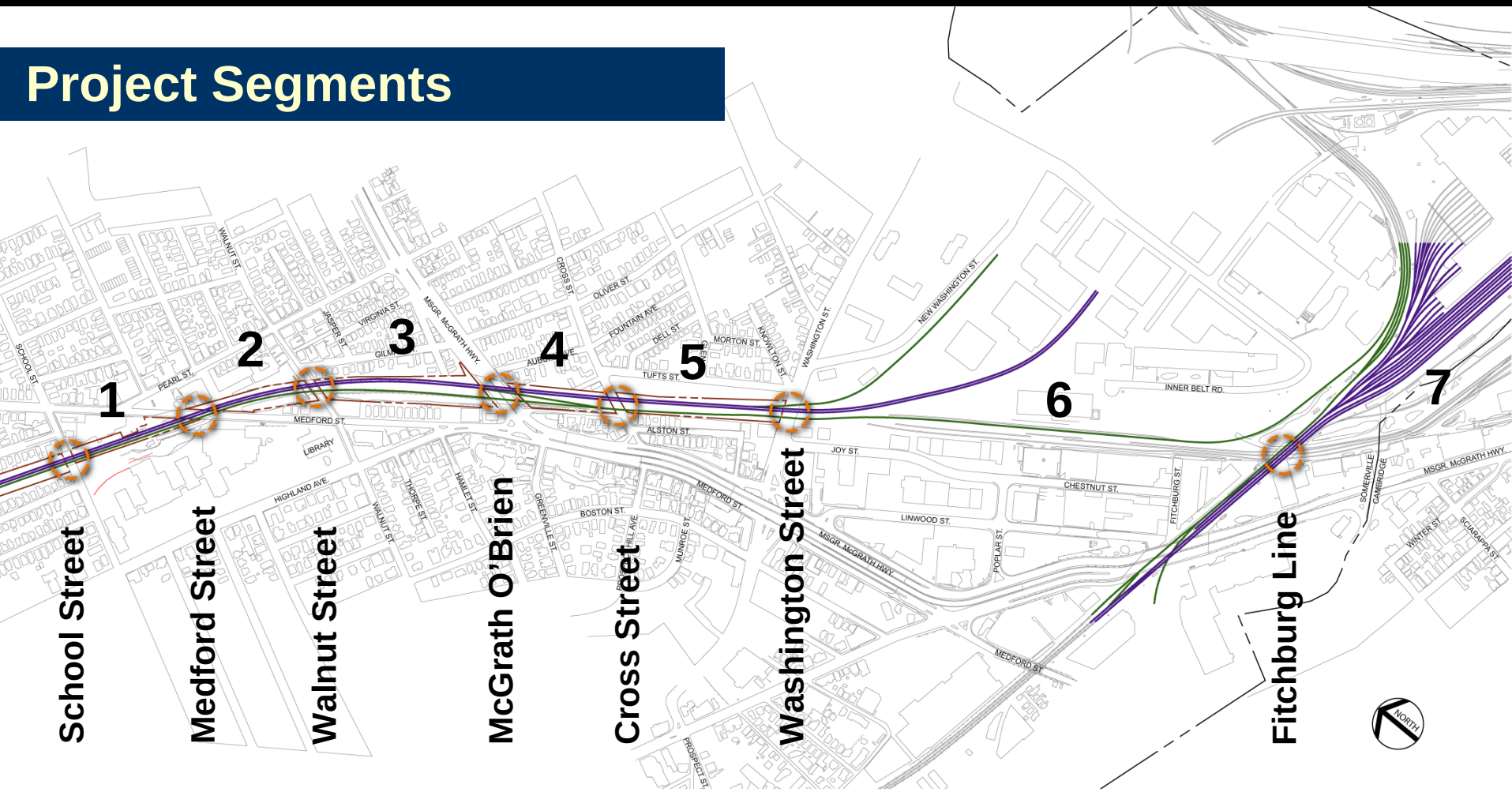
Project Segments



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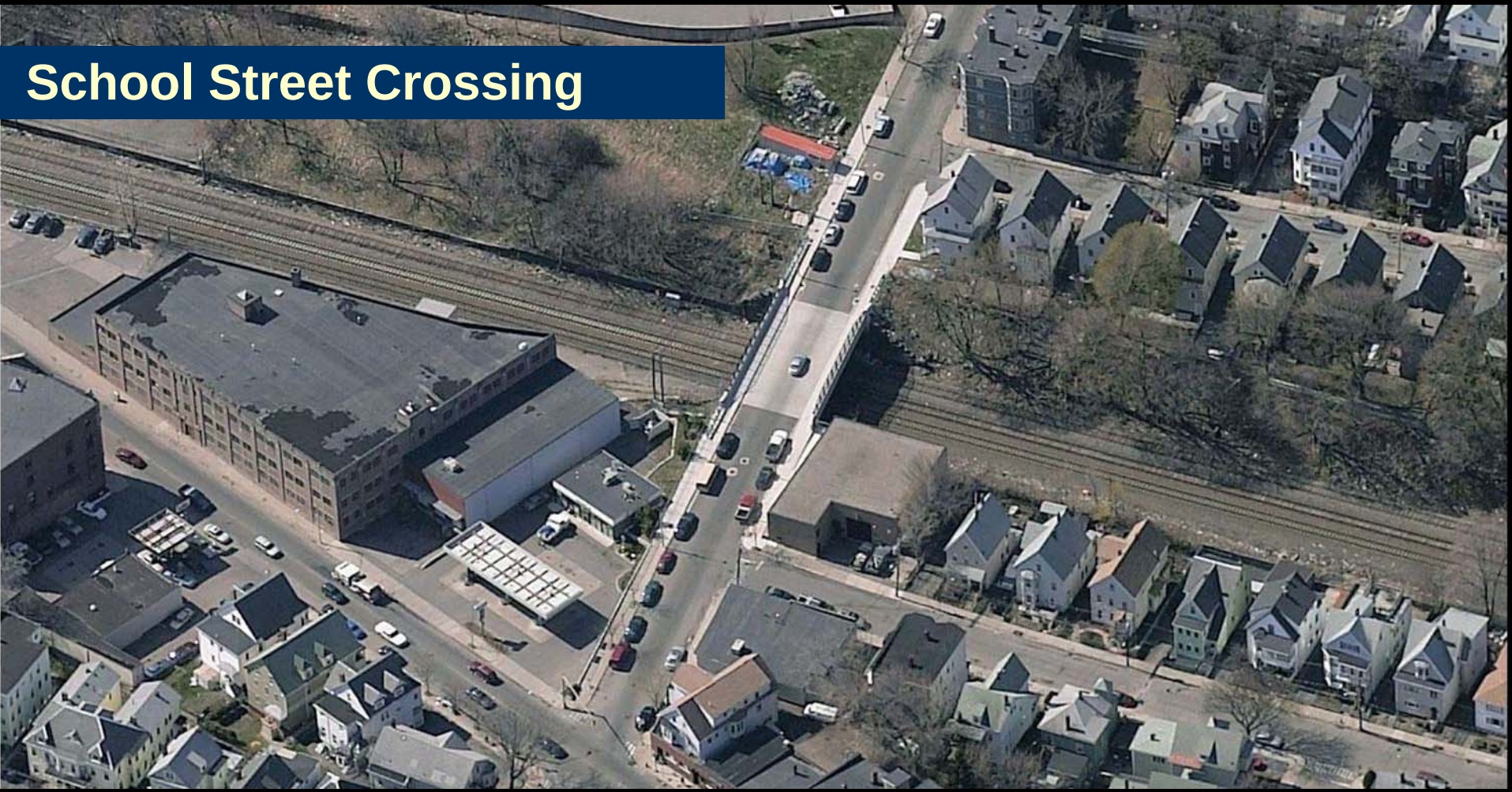
Project Crossings

School Street	1-lane w/ parallel parking
Medford Street	2-lane w/ parallel parking
Walnut Street	1-lane w/ parallel parking
McGrath Highway	6-lane arterial
Cross Street	2-lane
Washington Street	6-track bridge
Fitchburg Line	Former Red Bridge

School Street Crossing



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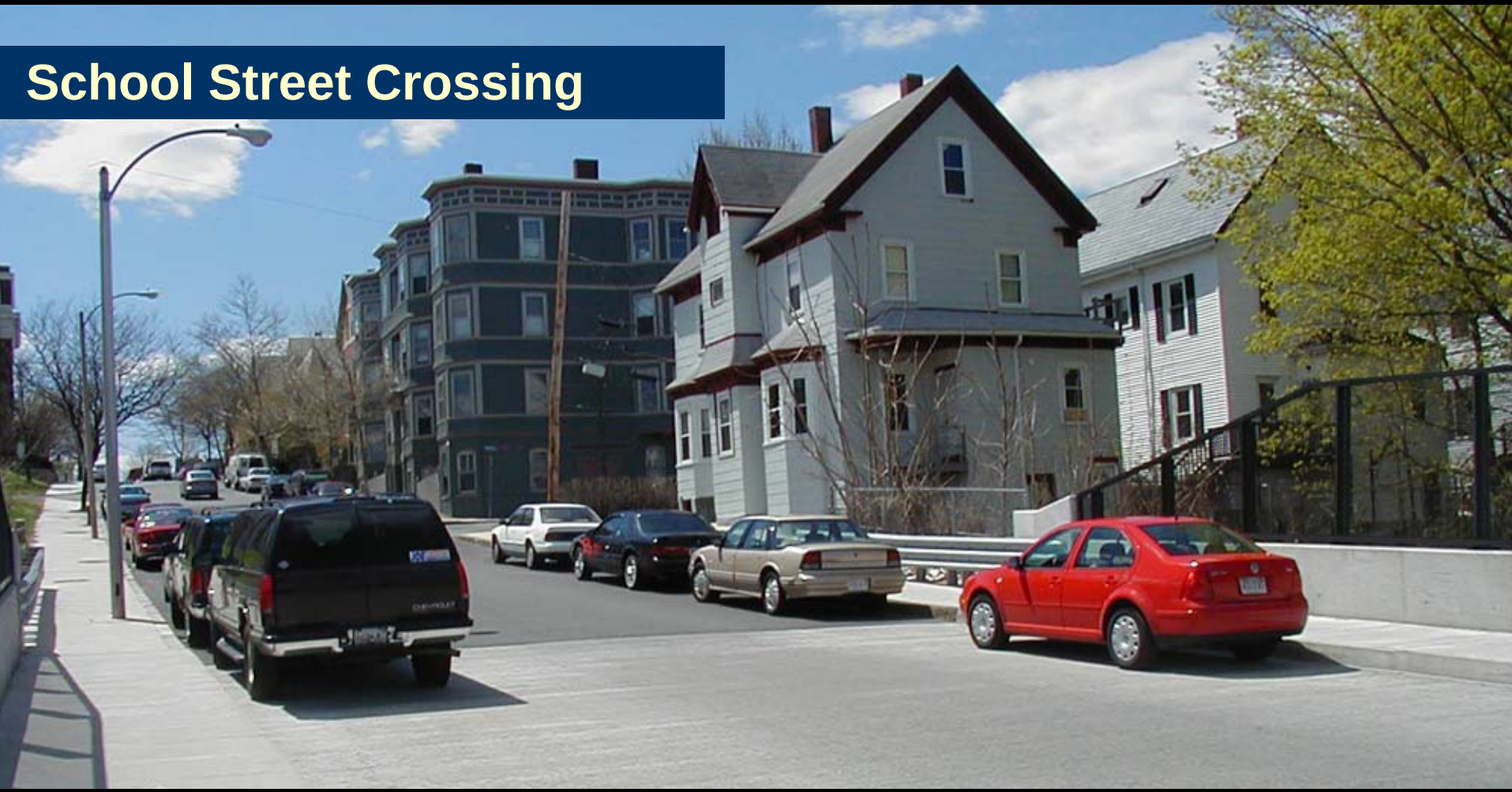
School Street Crossing



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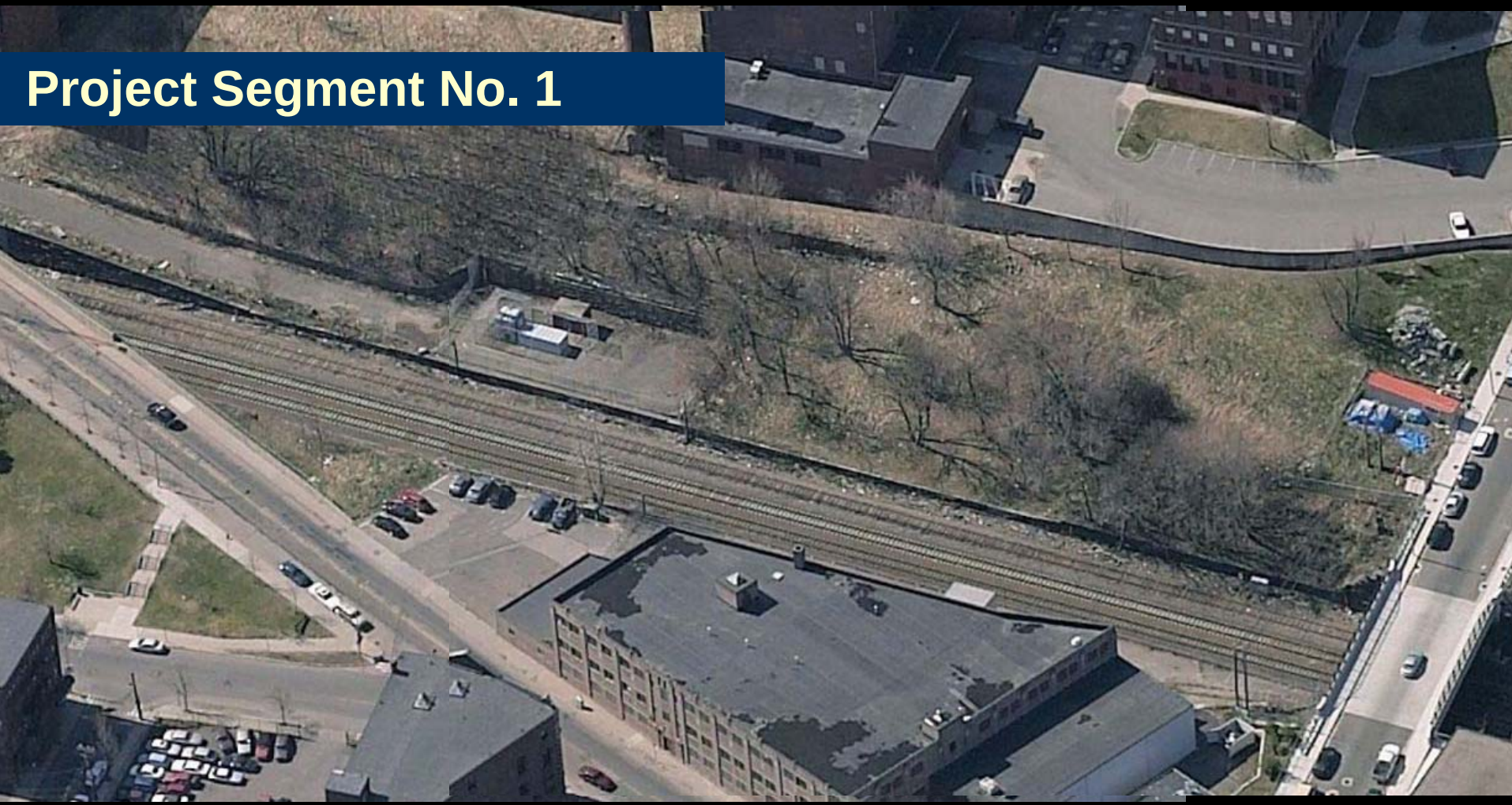
Project Segment No. 1



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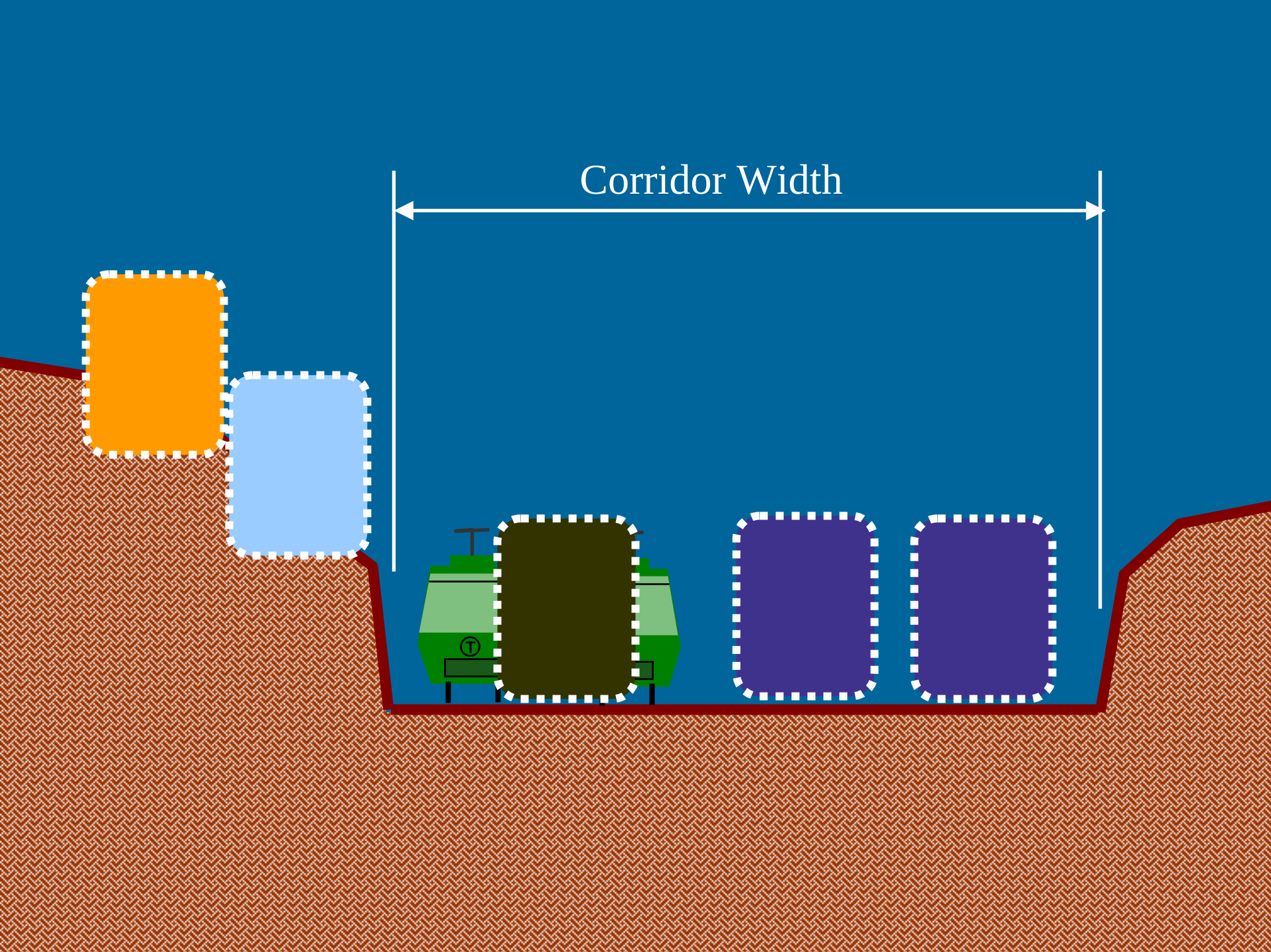
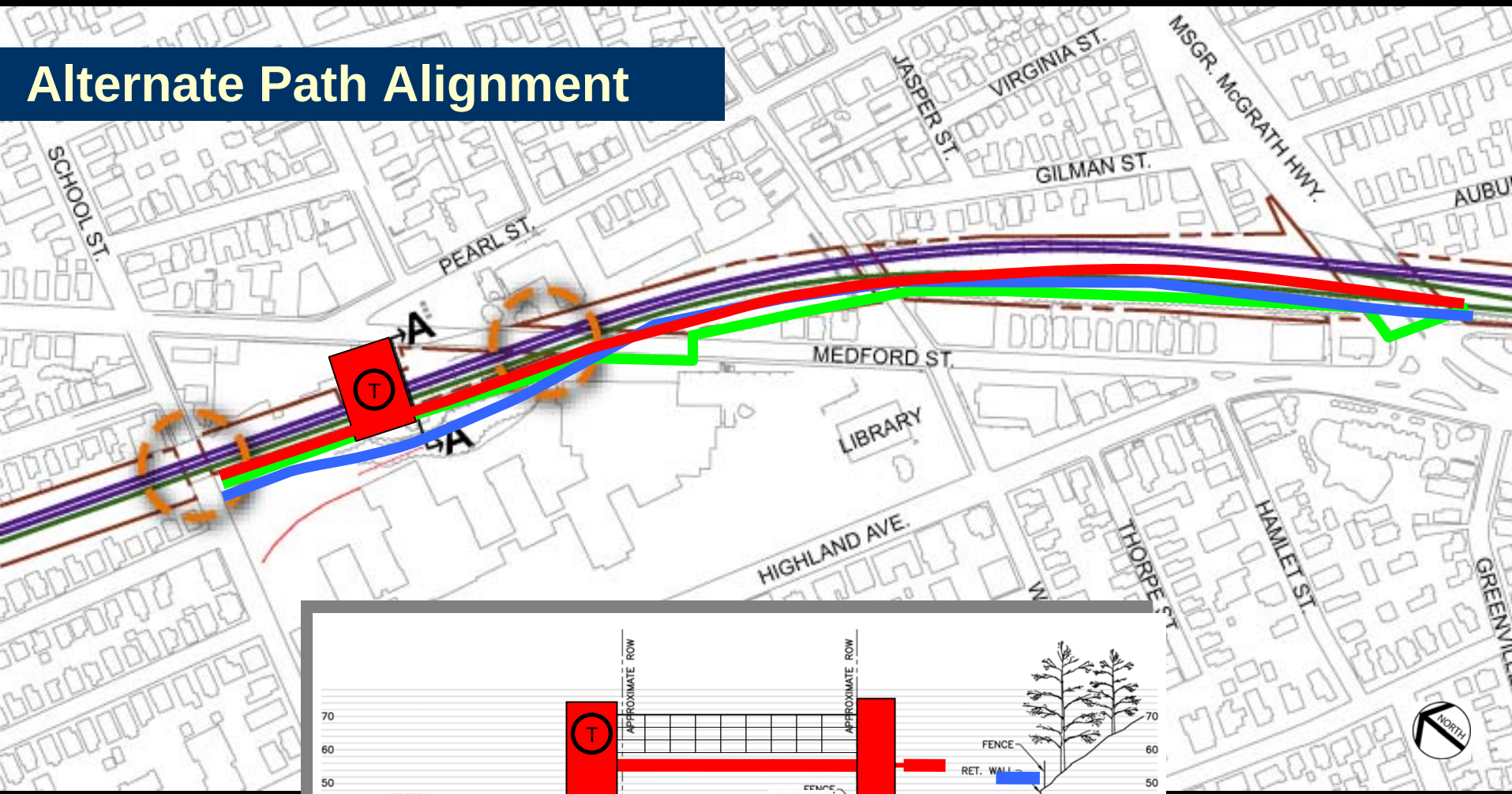
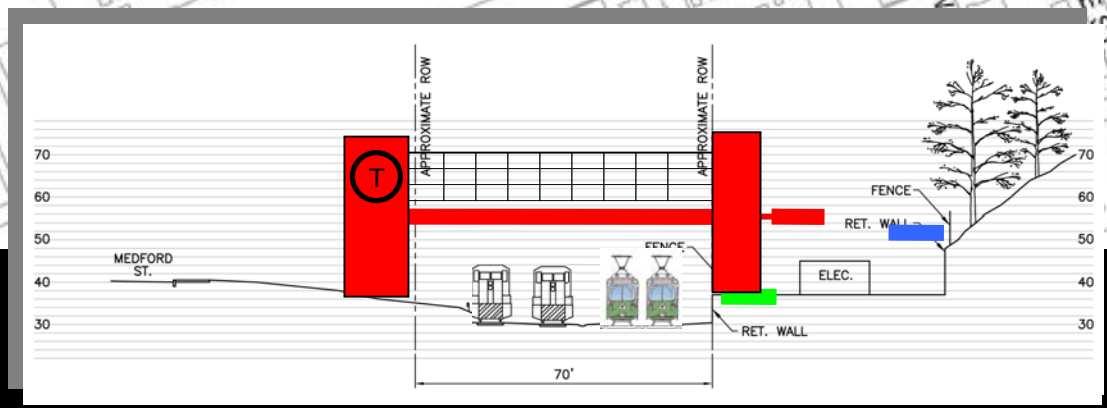

Corridor Width

Alternate Path Alignment





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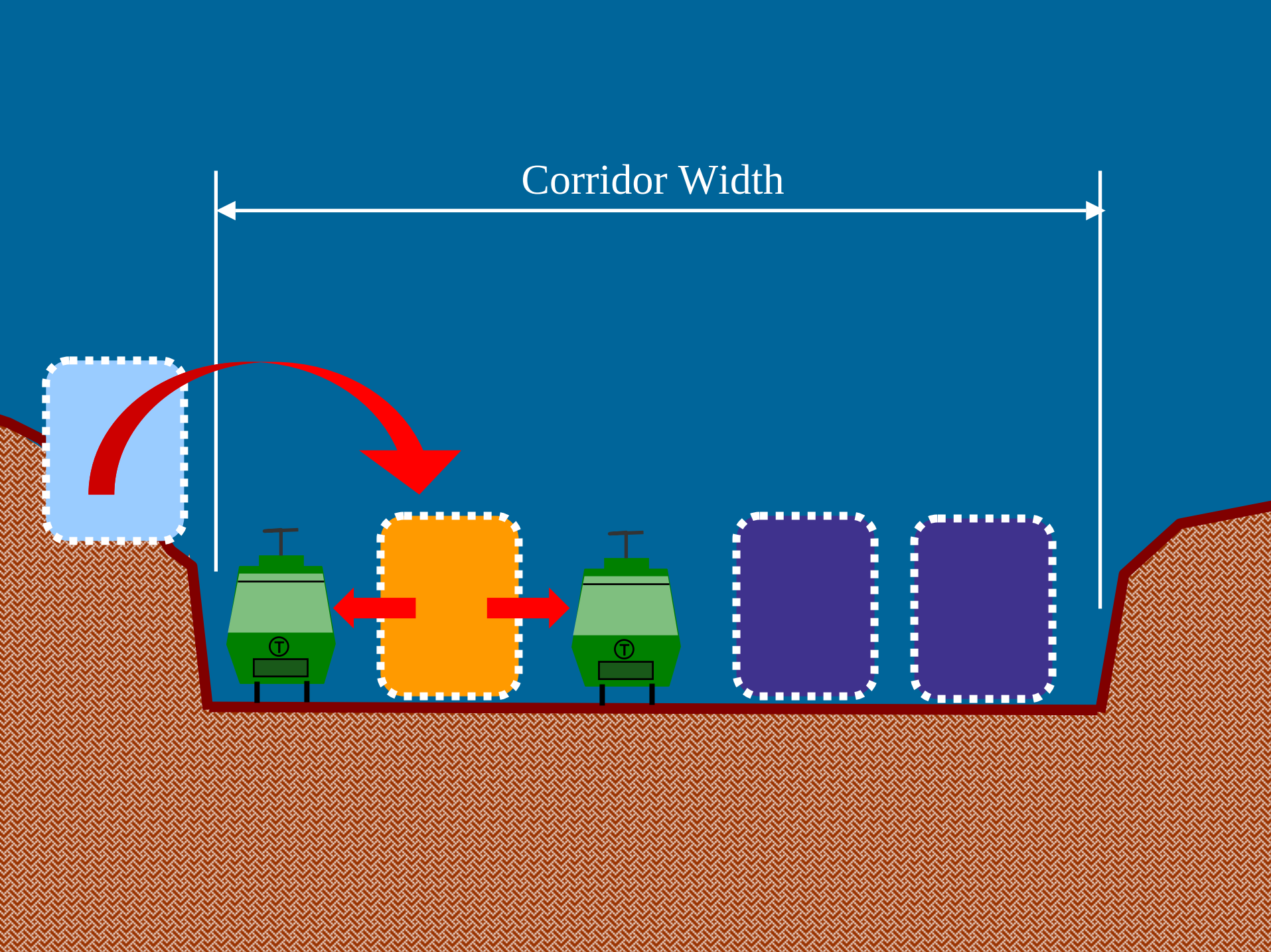
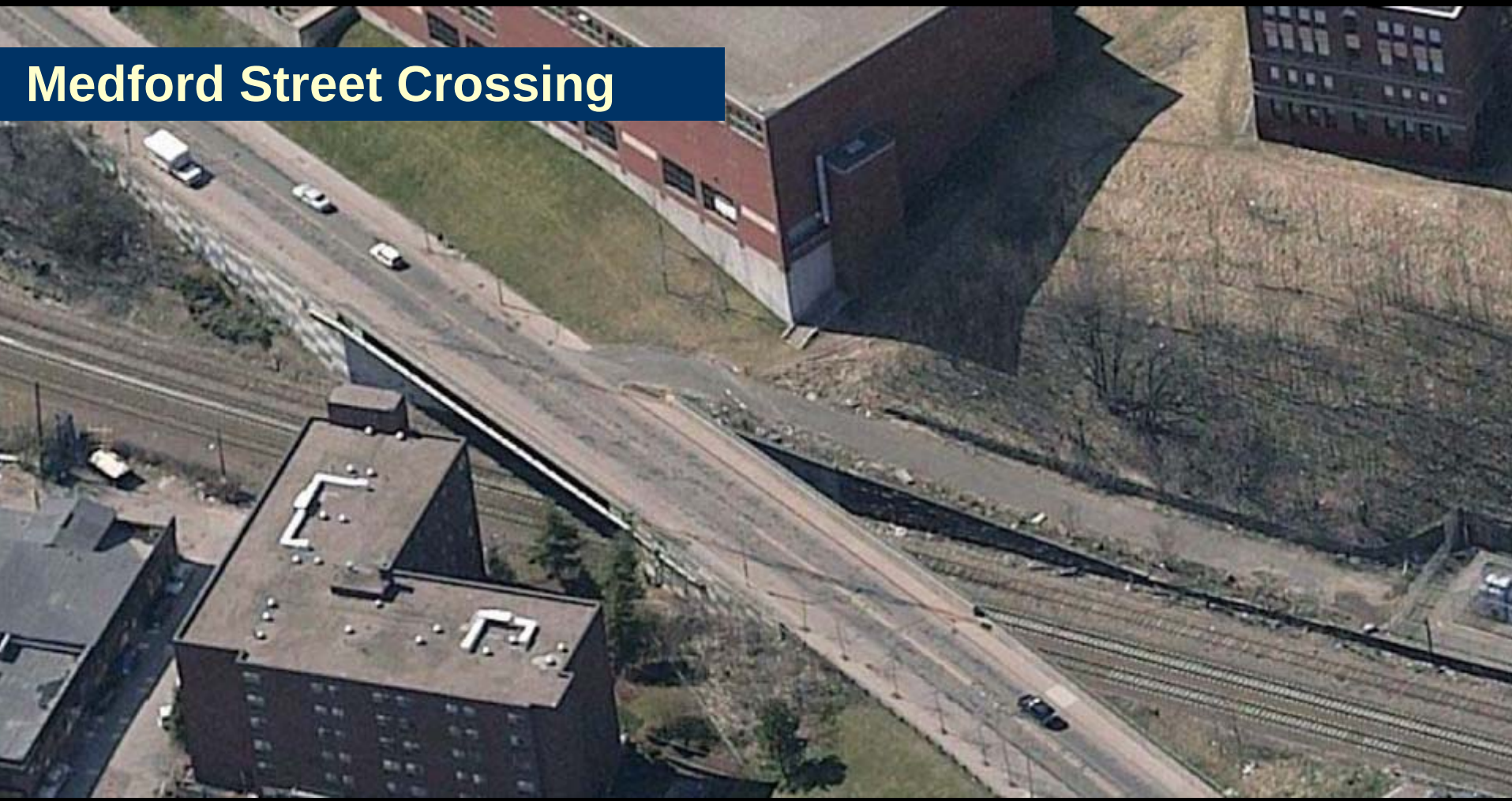

Corridor Width

Medford Street Crossing



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Medford Street Crossing

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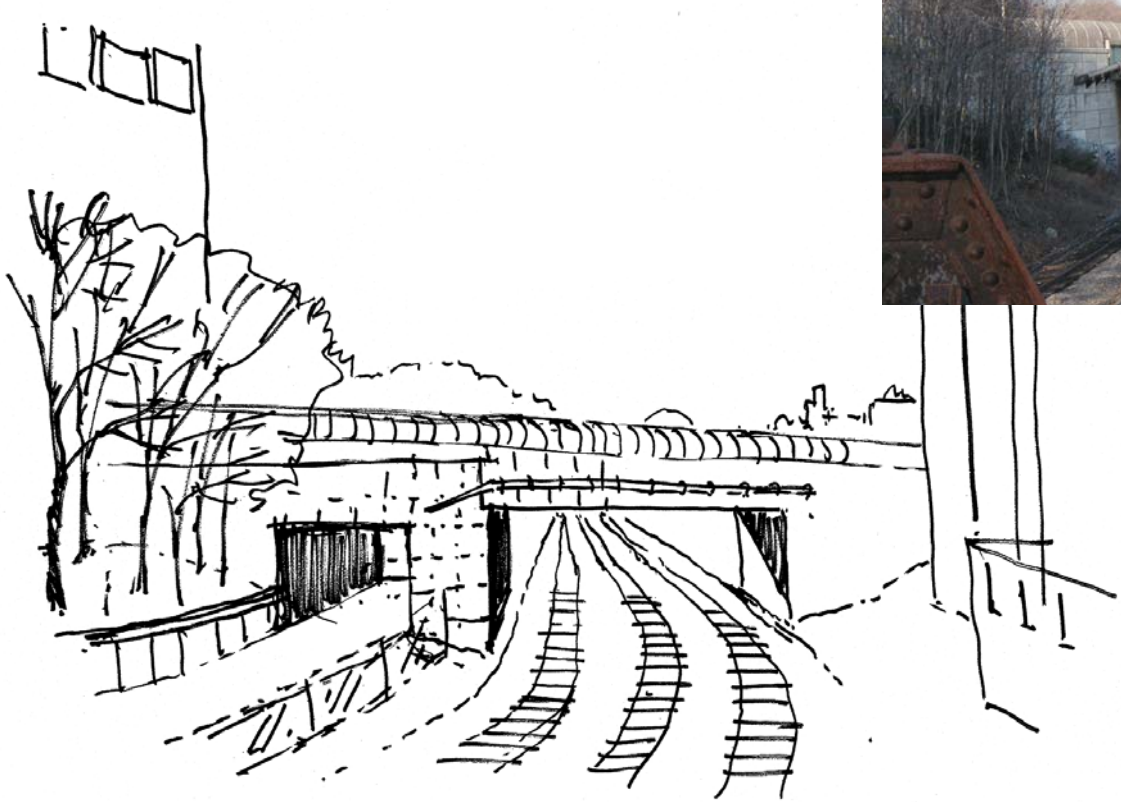
Underpass



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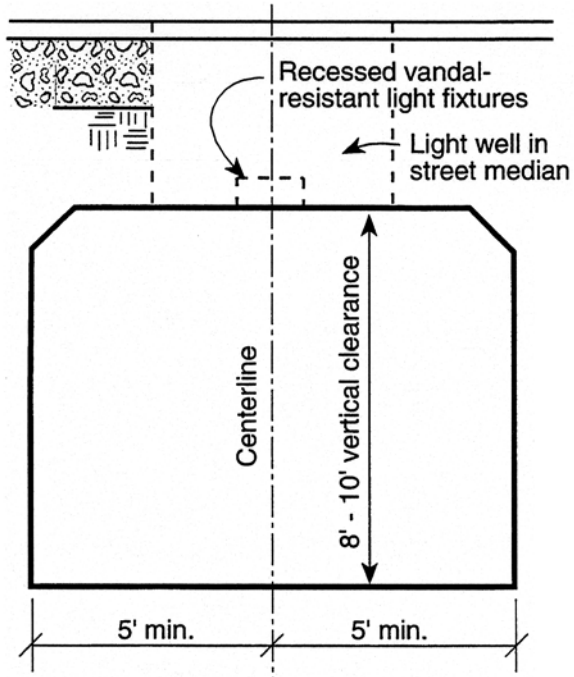
Pedestrian Underpass

Source: Building Better Bicycling - 1999. MassHighway.



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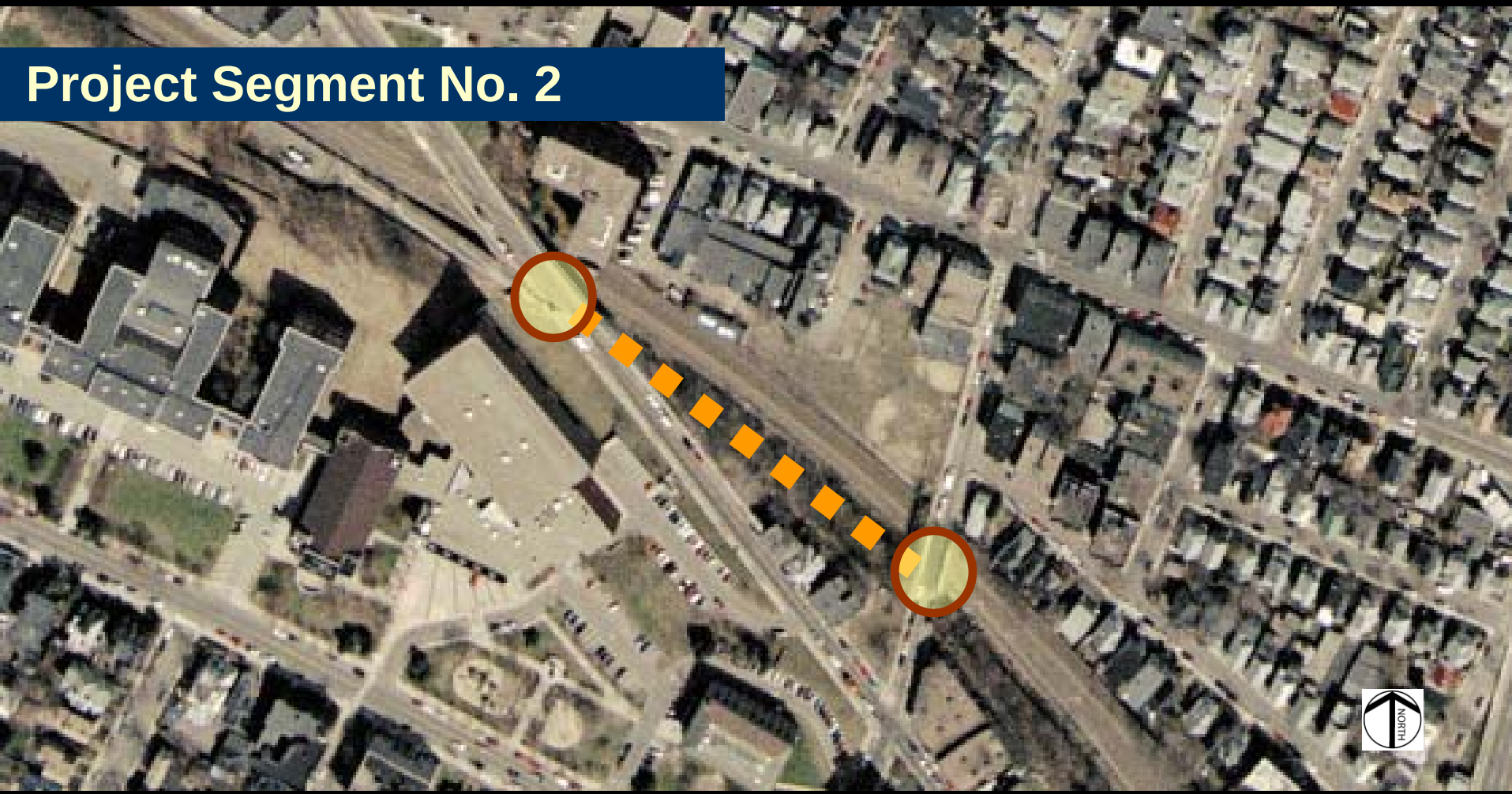

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Project Segment No. 2

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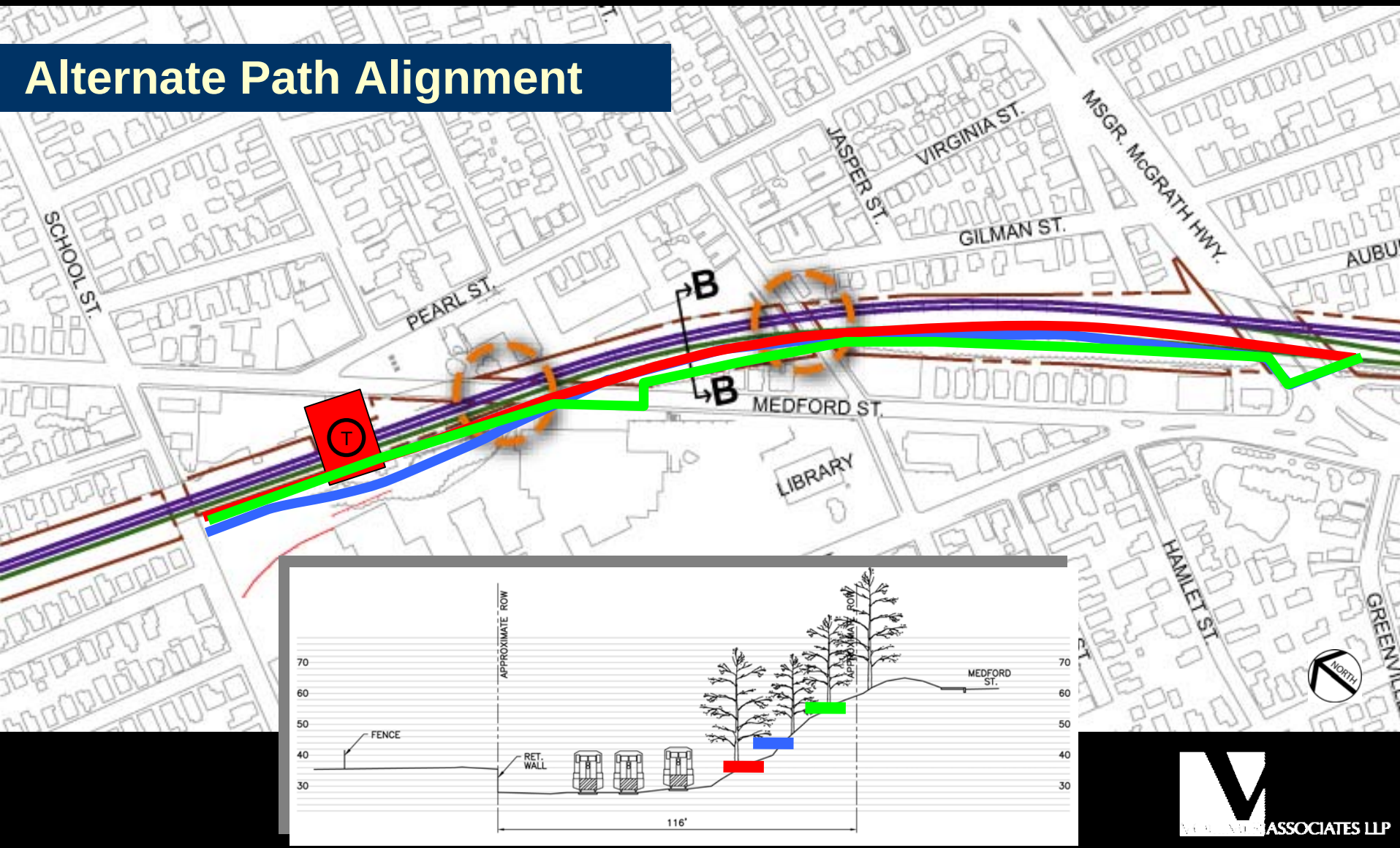
Alternate Path Alignment



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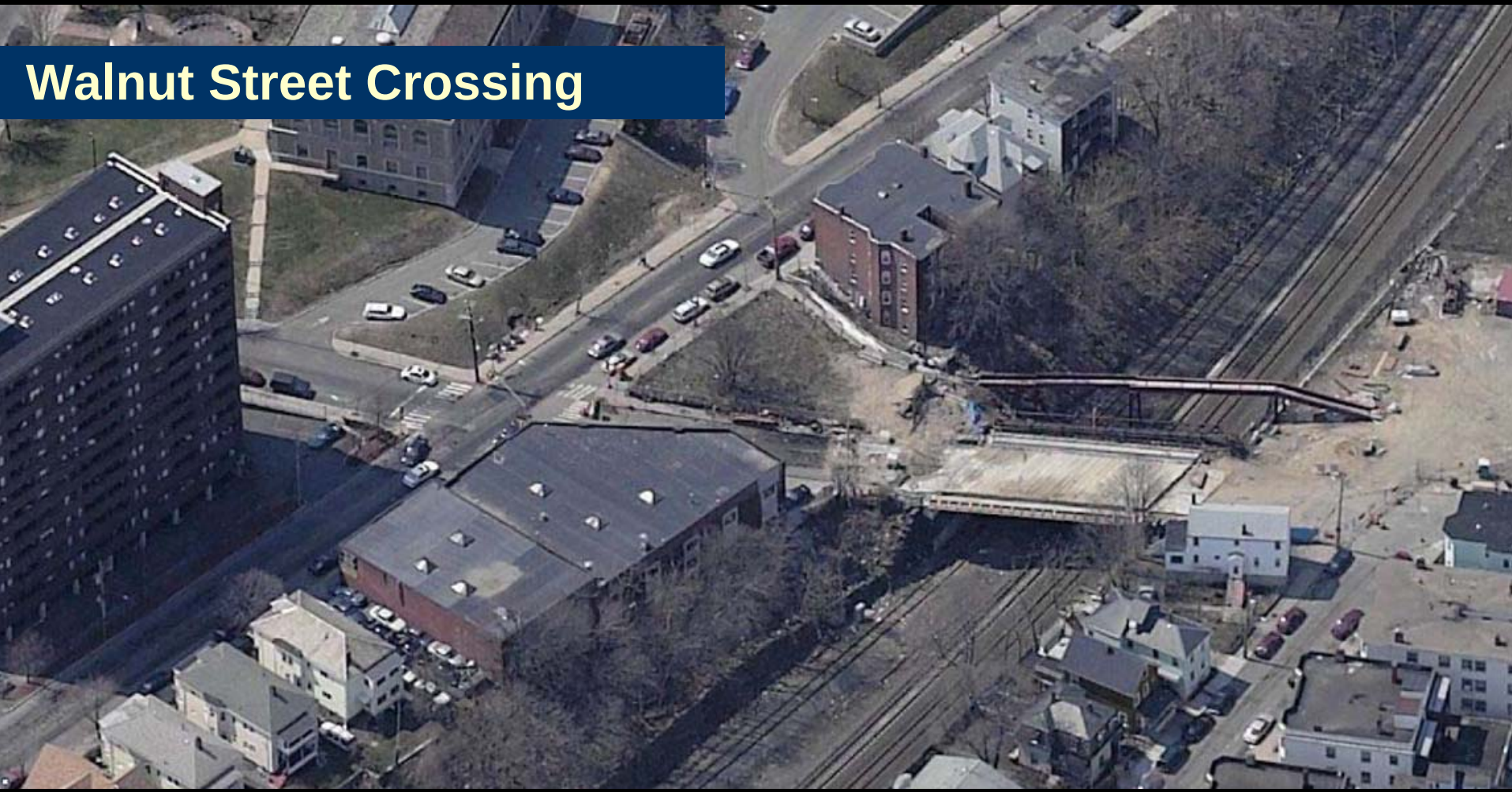
Walnut Street Crossing



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Walnut Street Crossing

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Project Segment No. 3

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Project Segment No. 3

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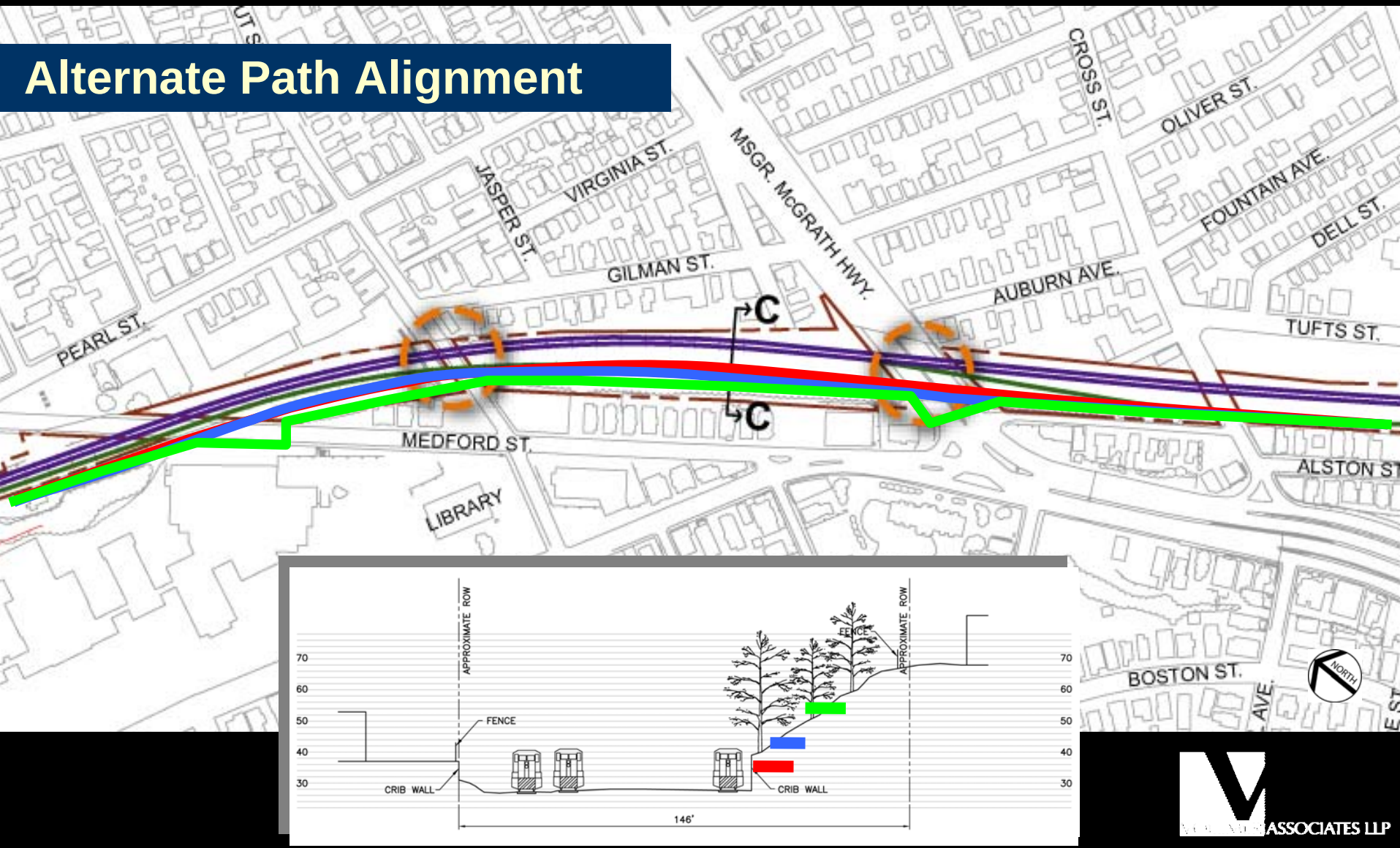
Alternate Path Alignment



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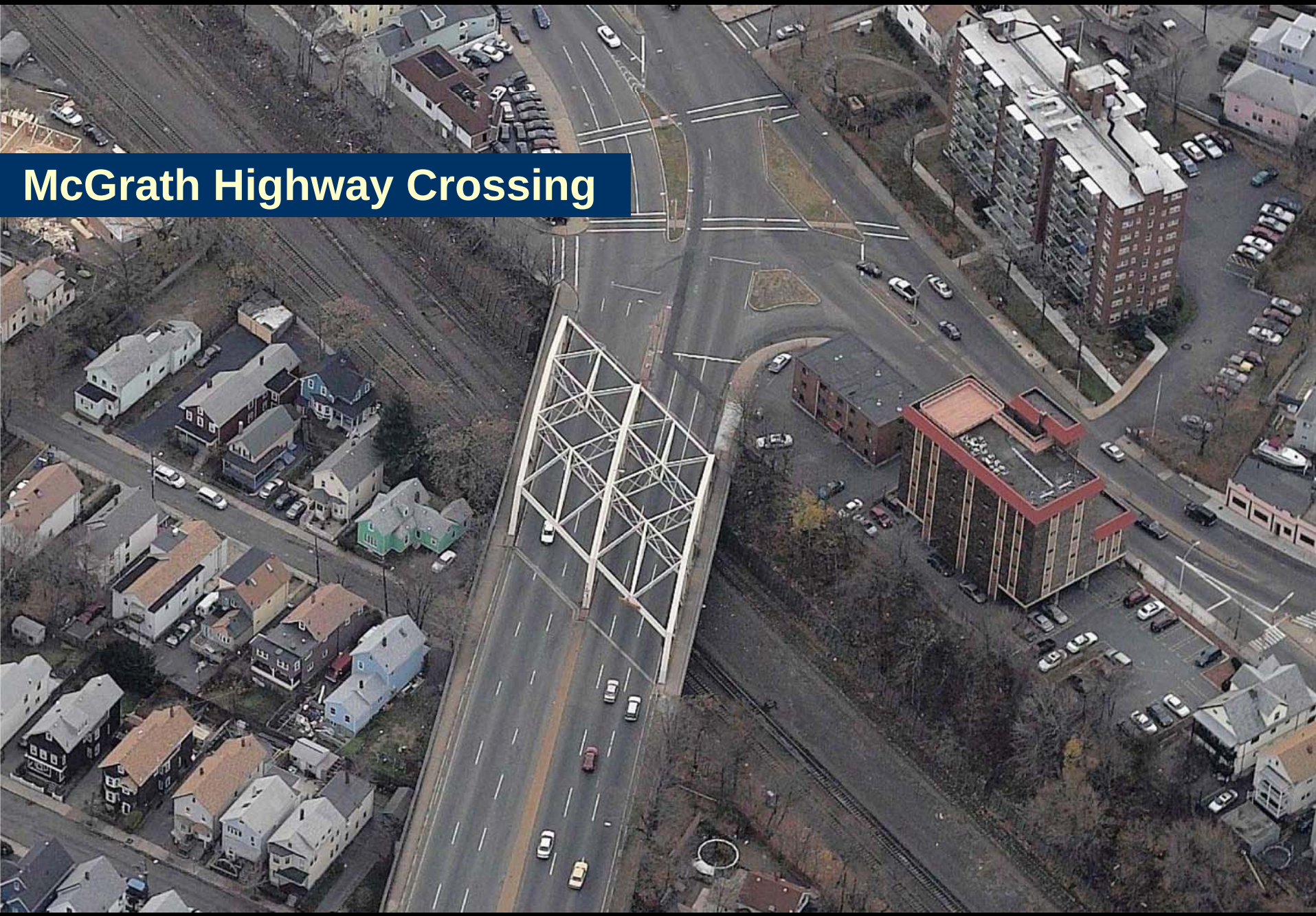
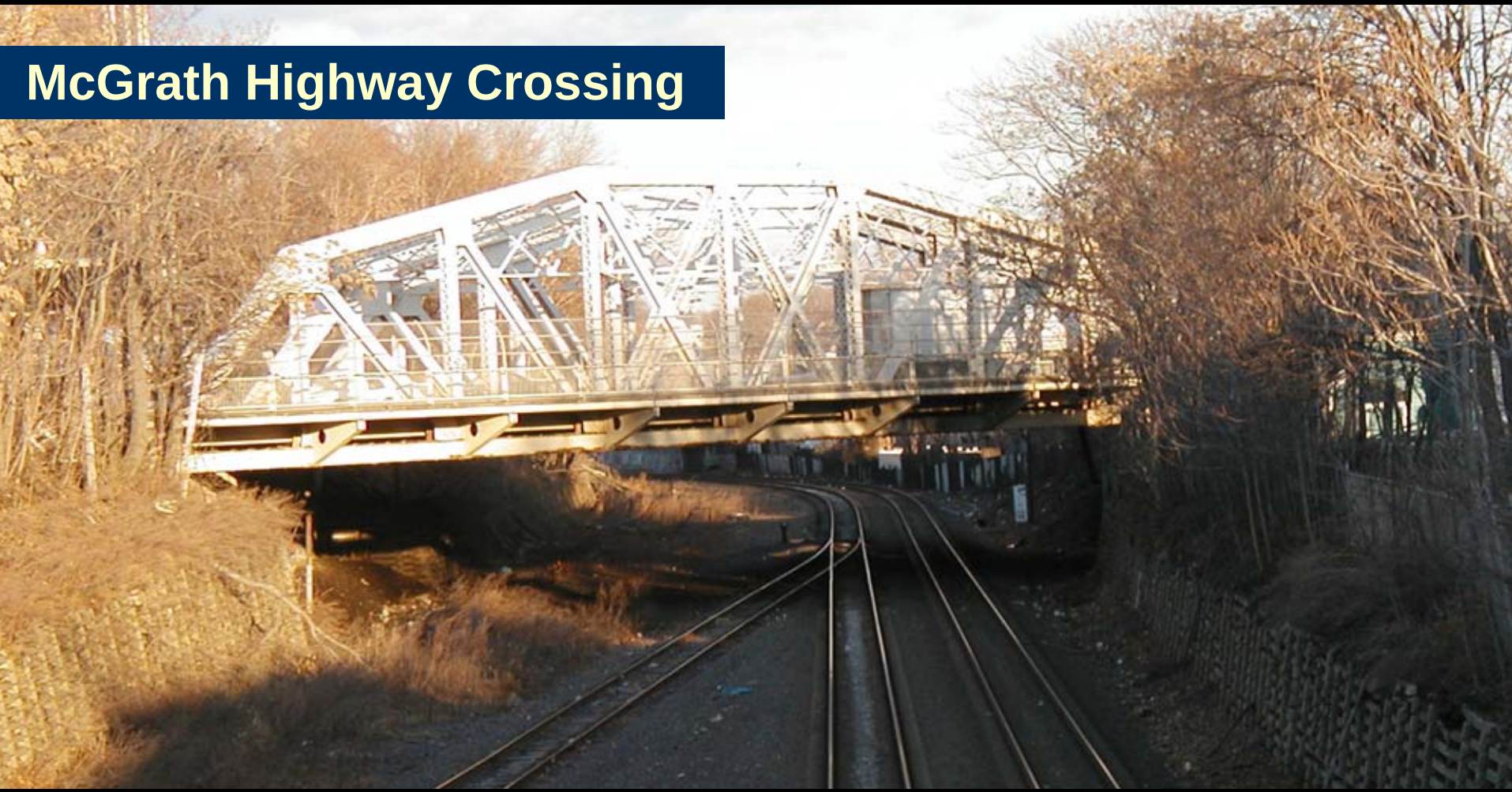

McGrath Highway Crossing

McGrath Highway Crossing



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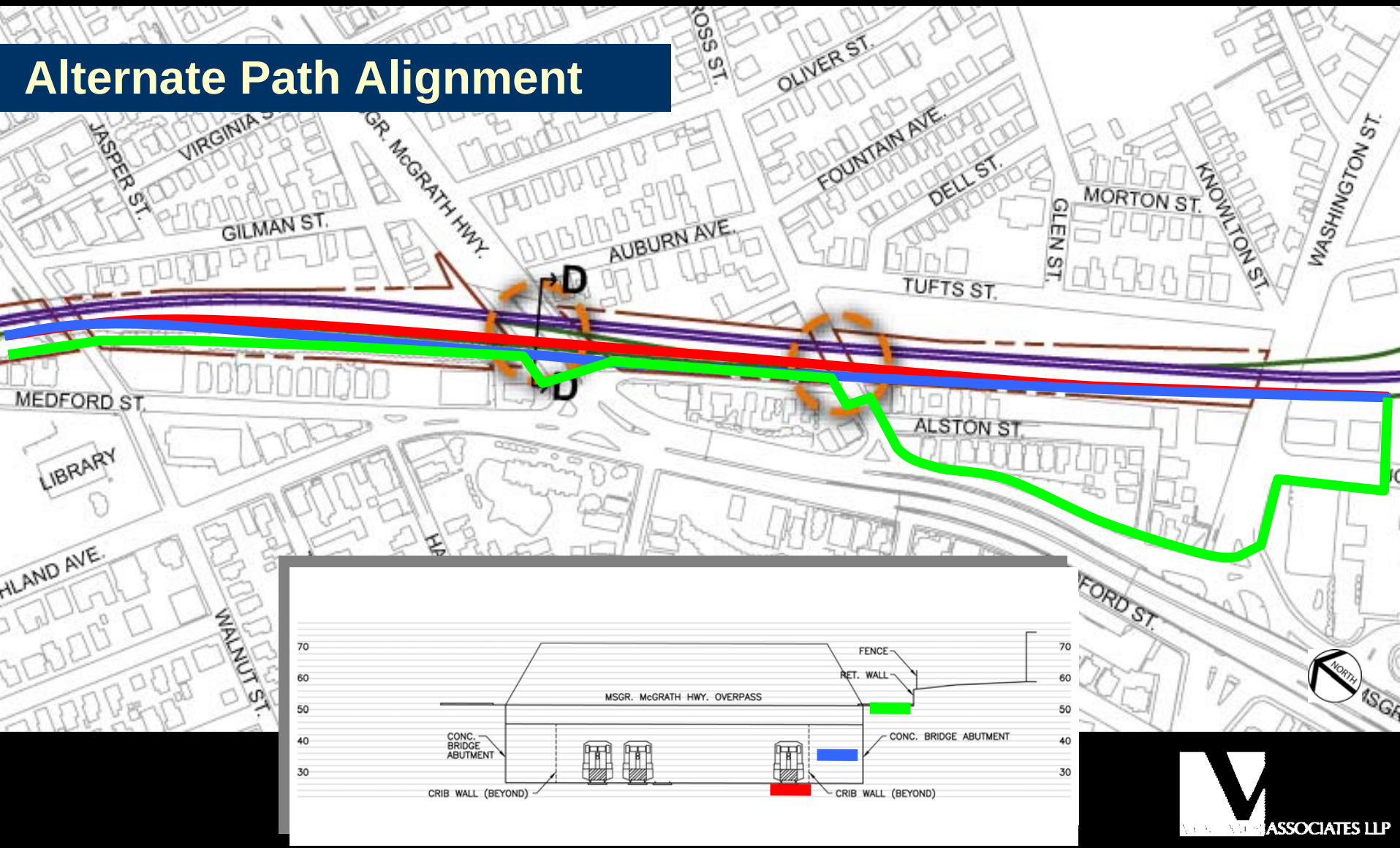
Alternate Path Alignment



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Project Segment No. 4

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Project Segment No. 4

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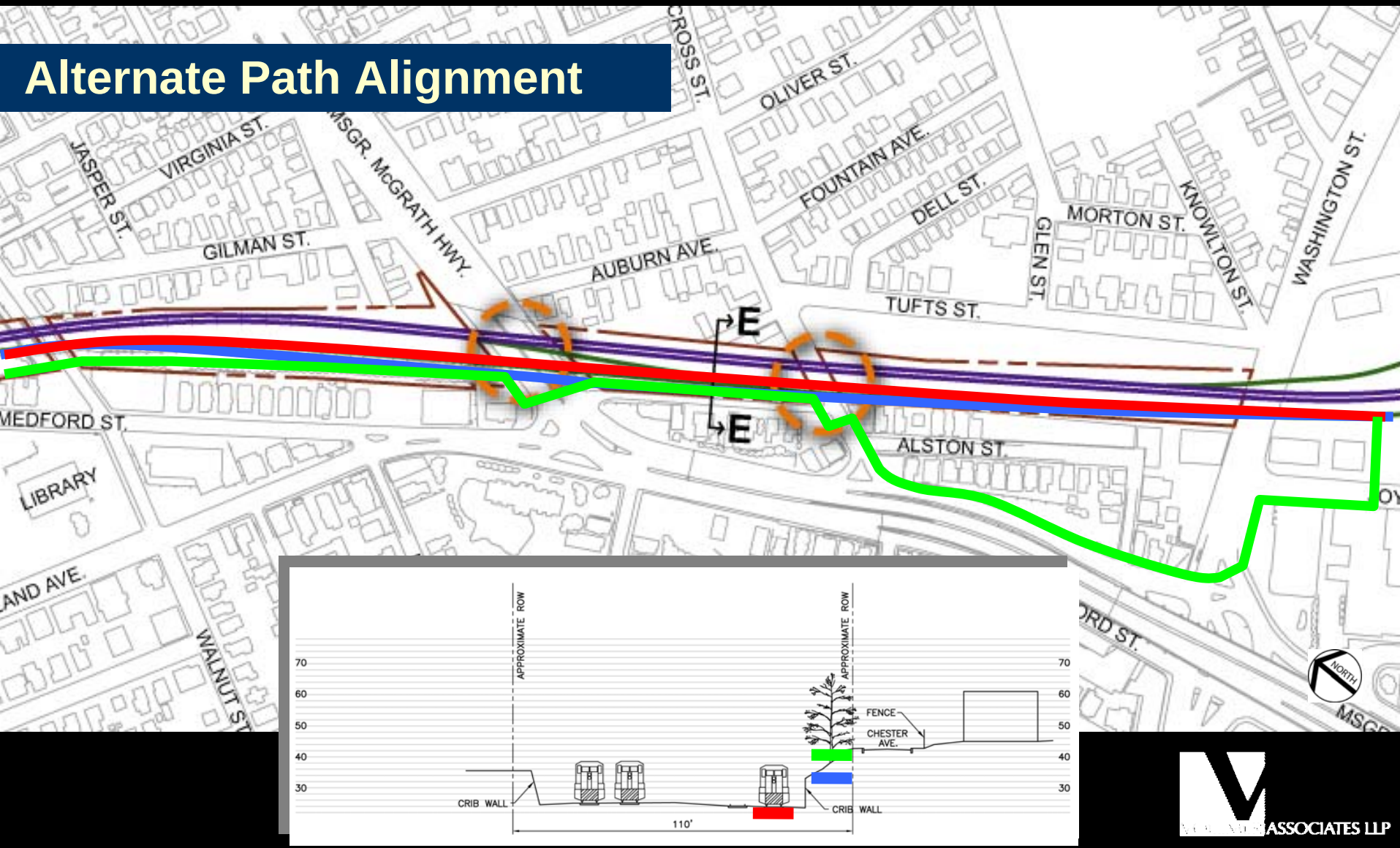
Alternate Path Alignment



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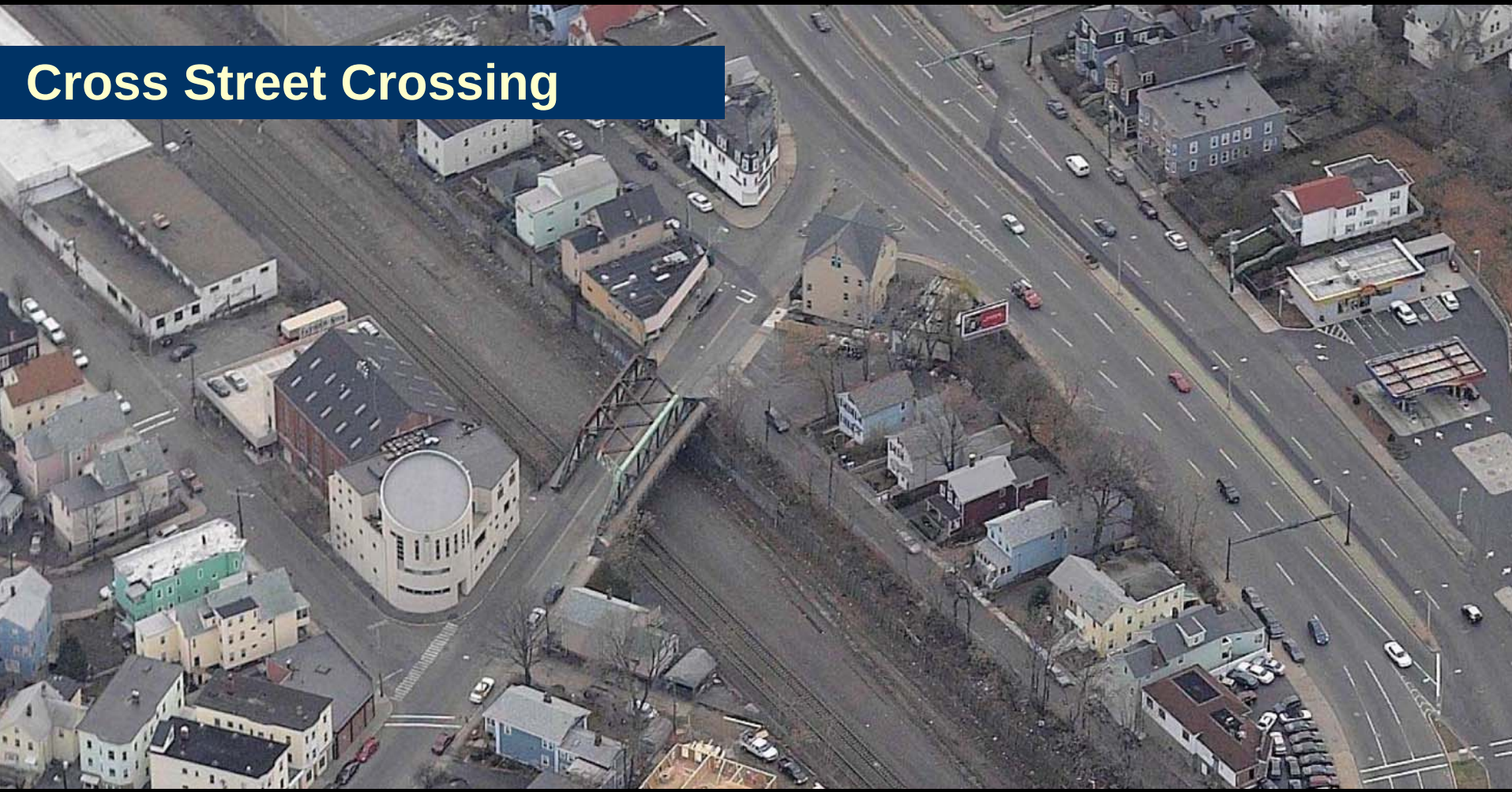
Cross Street Crossing



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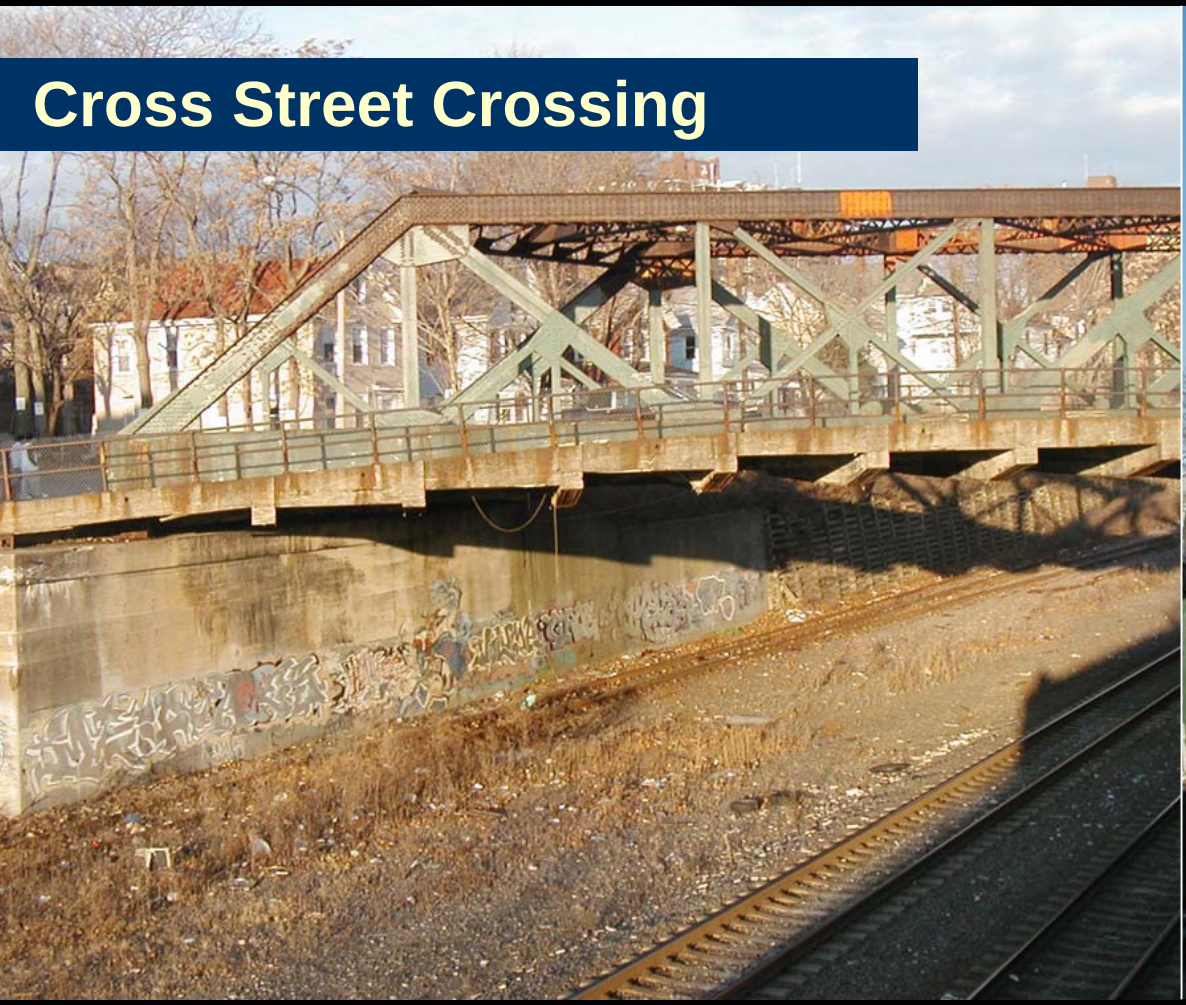
Cross Street Crossing



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Project Segment No. 5

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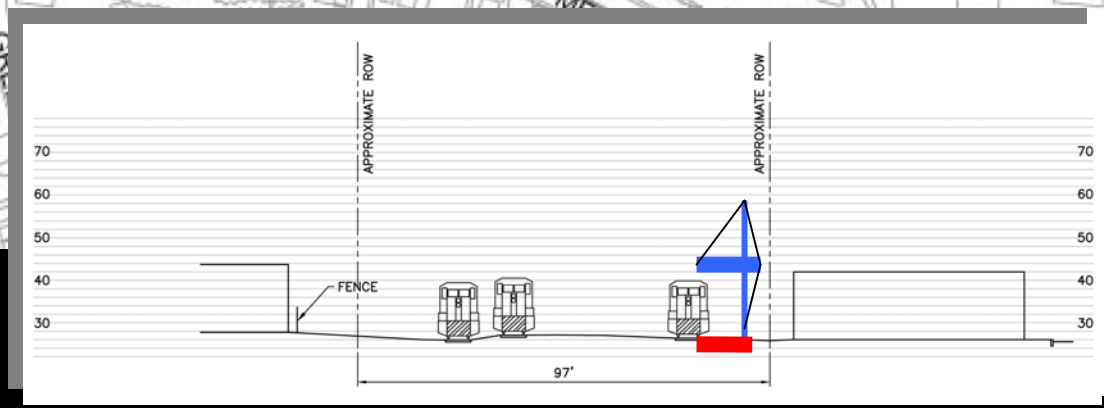
Alternate Path Alignment



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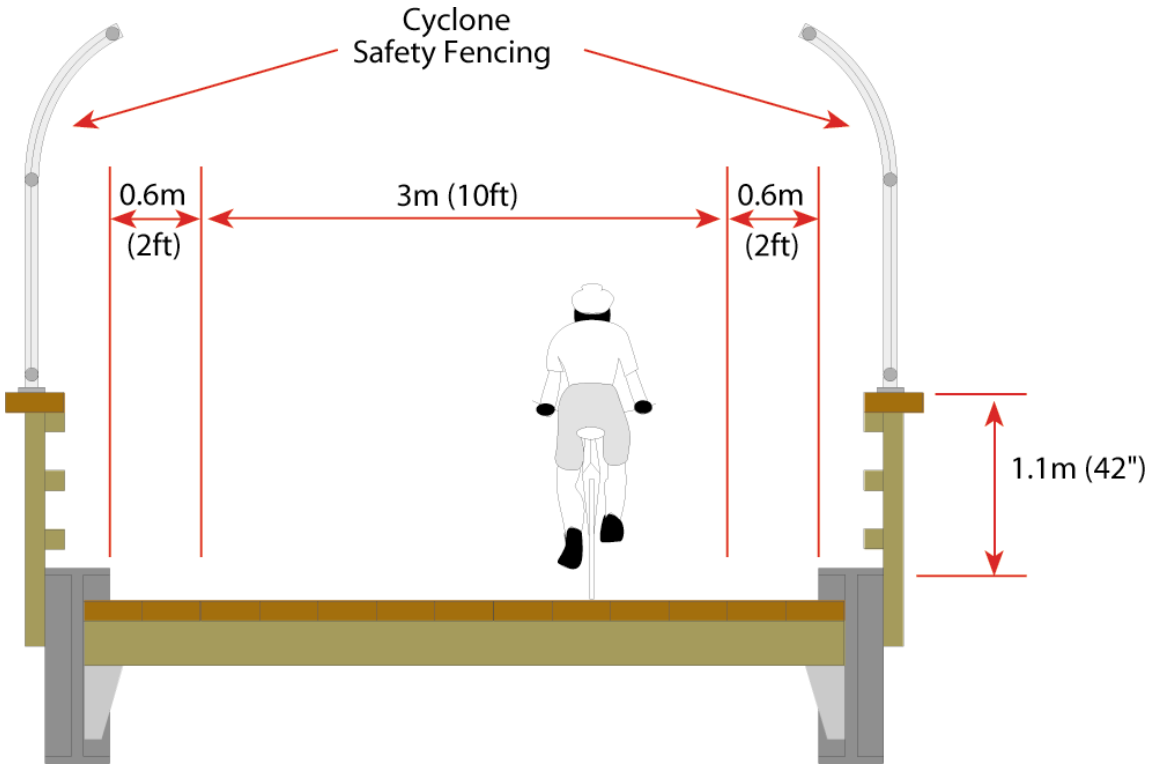
RWT Track Overcrossing

Source: Rails with Trails: Lessons Learned - 2002. USDOT



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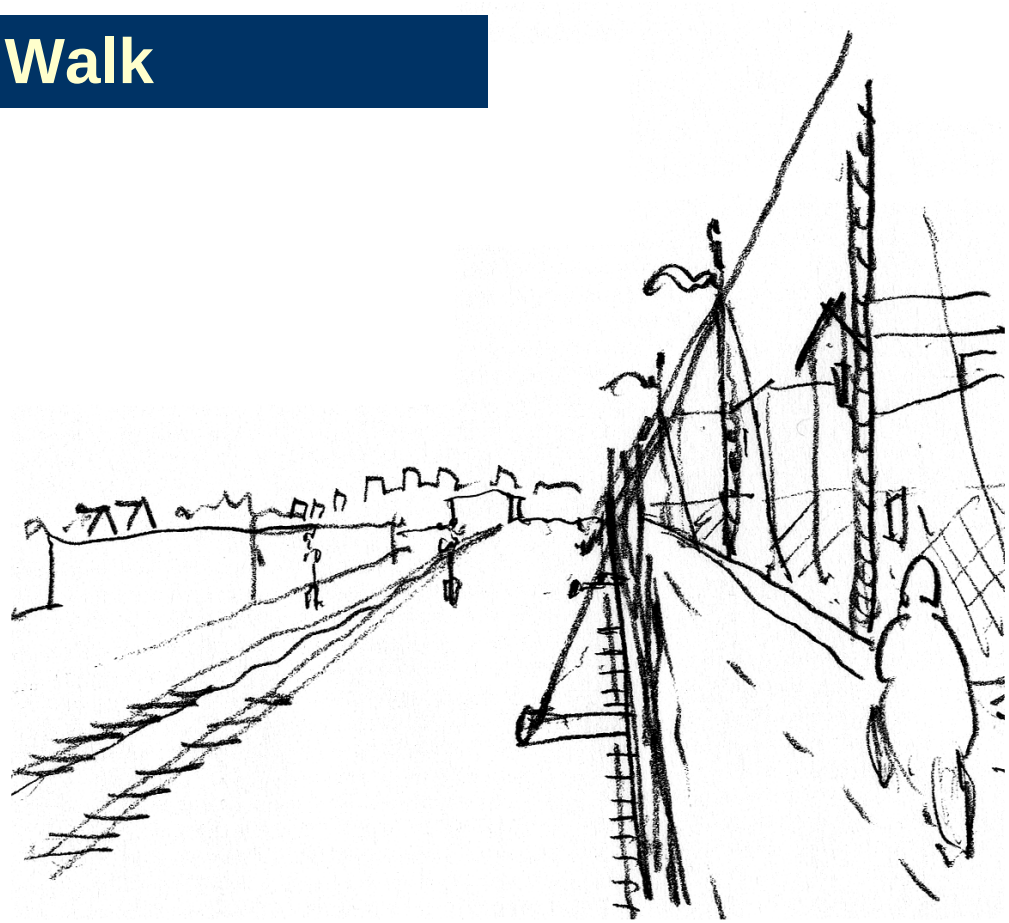
Cantilevered Walk



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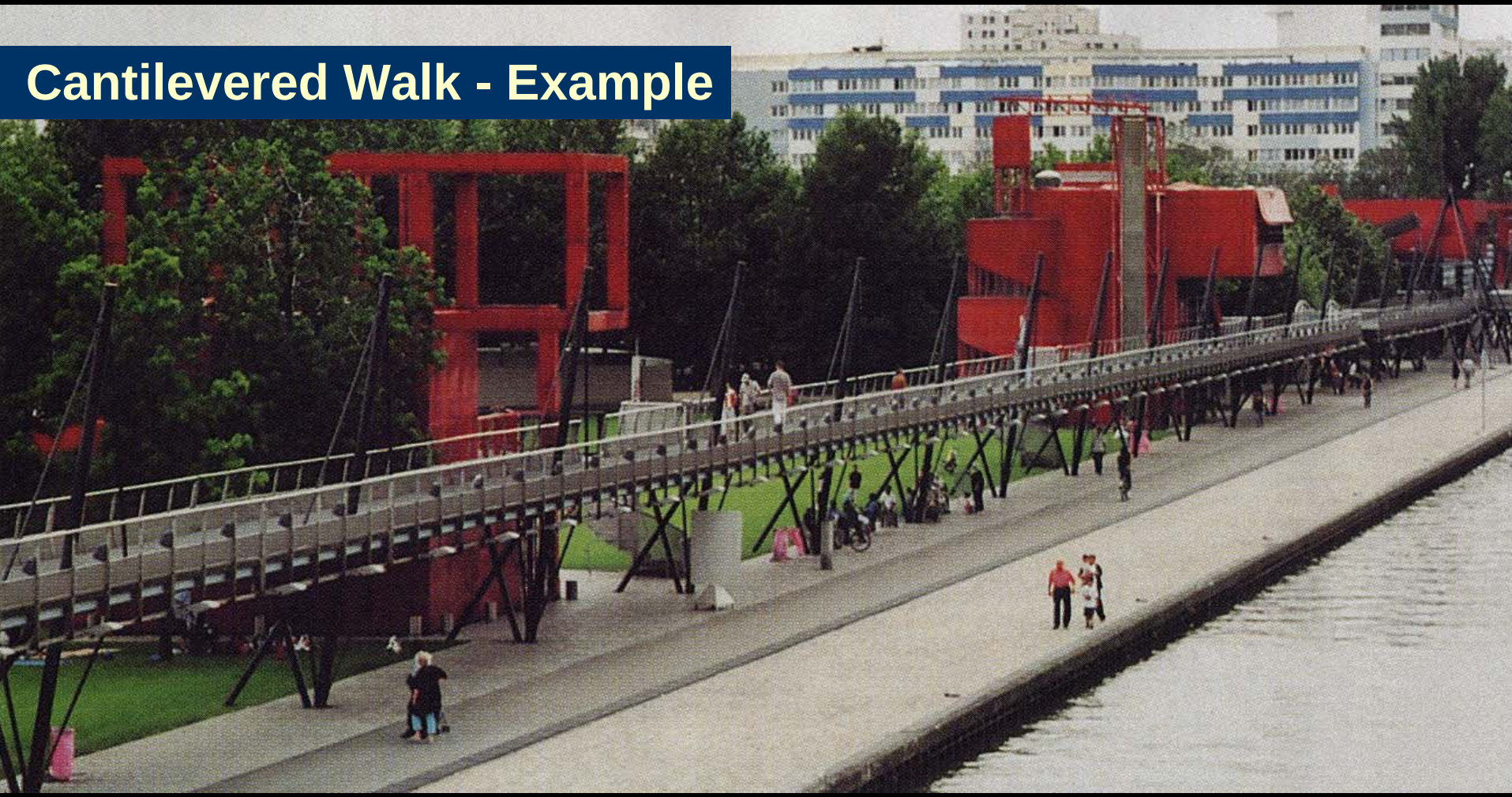
Cantilevered Walk - Example



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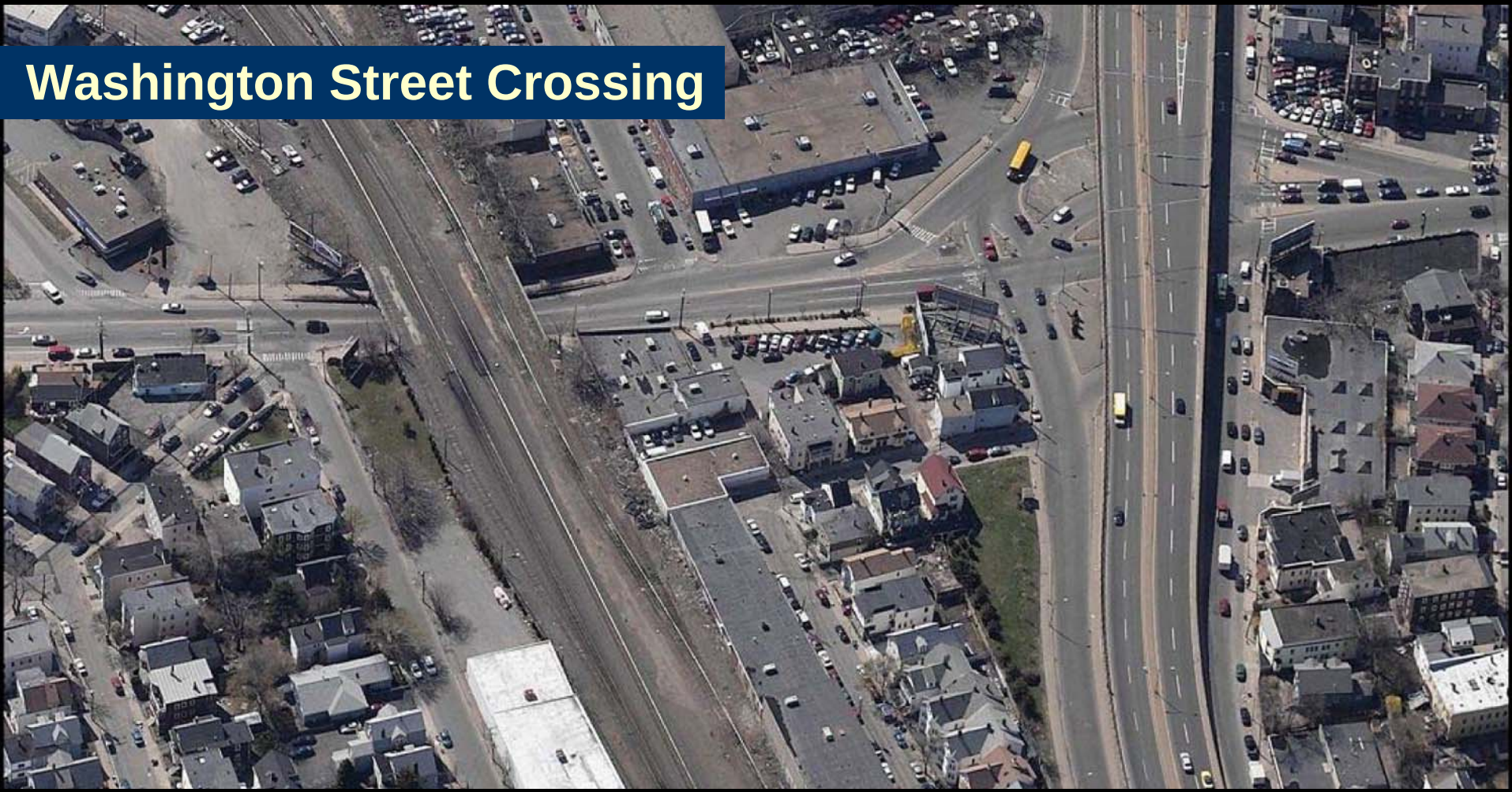
Washington Street Crossing



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Washington Street Crossing

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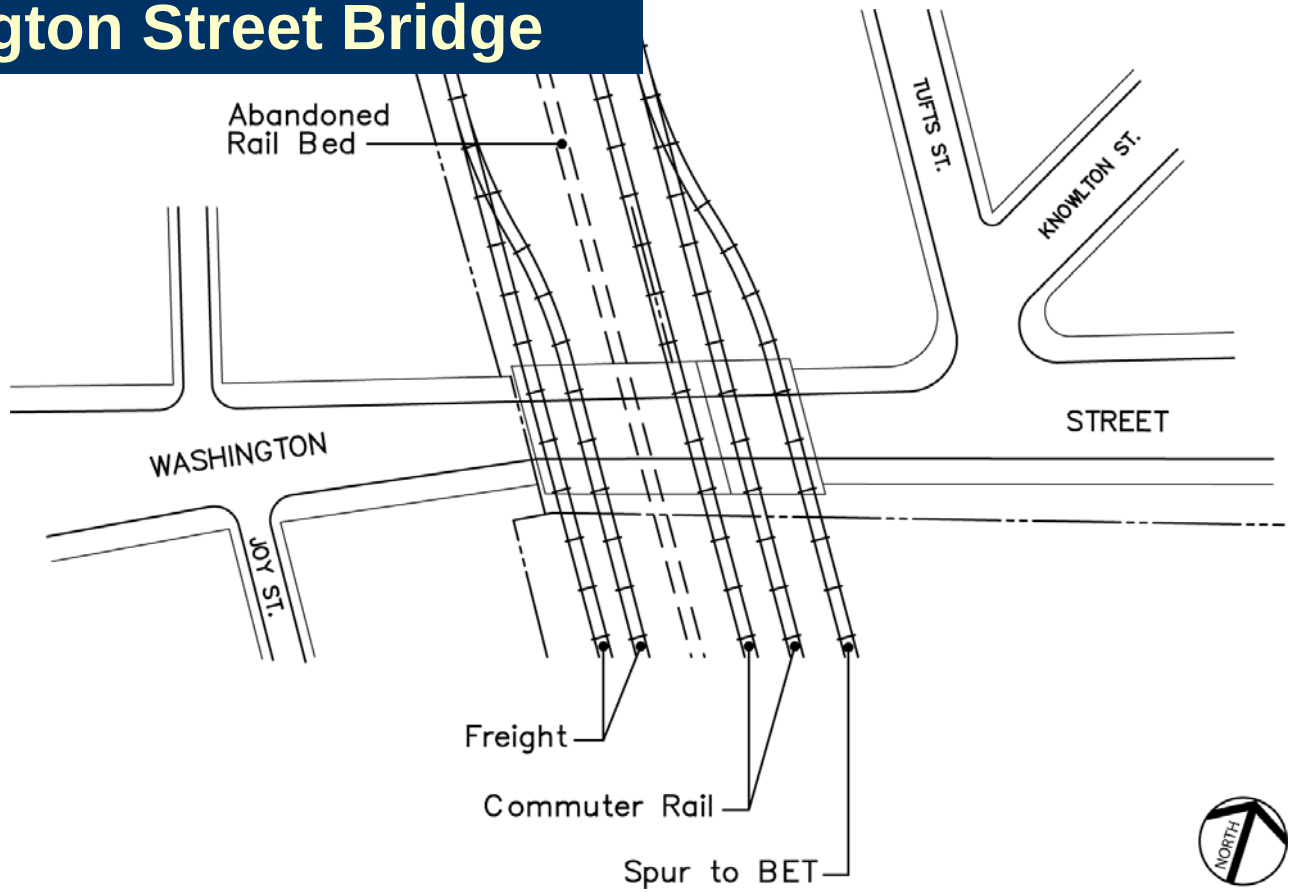
Washington Street Bridge



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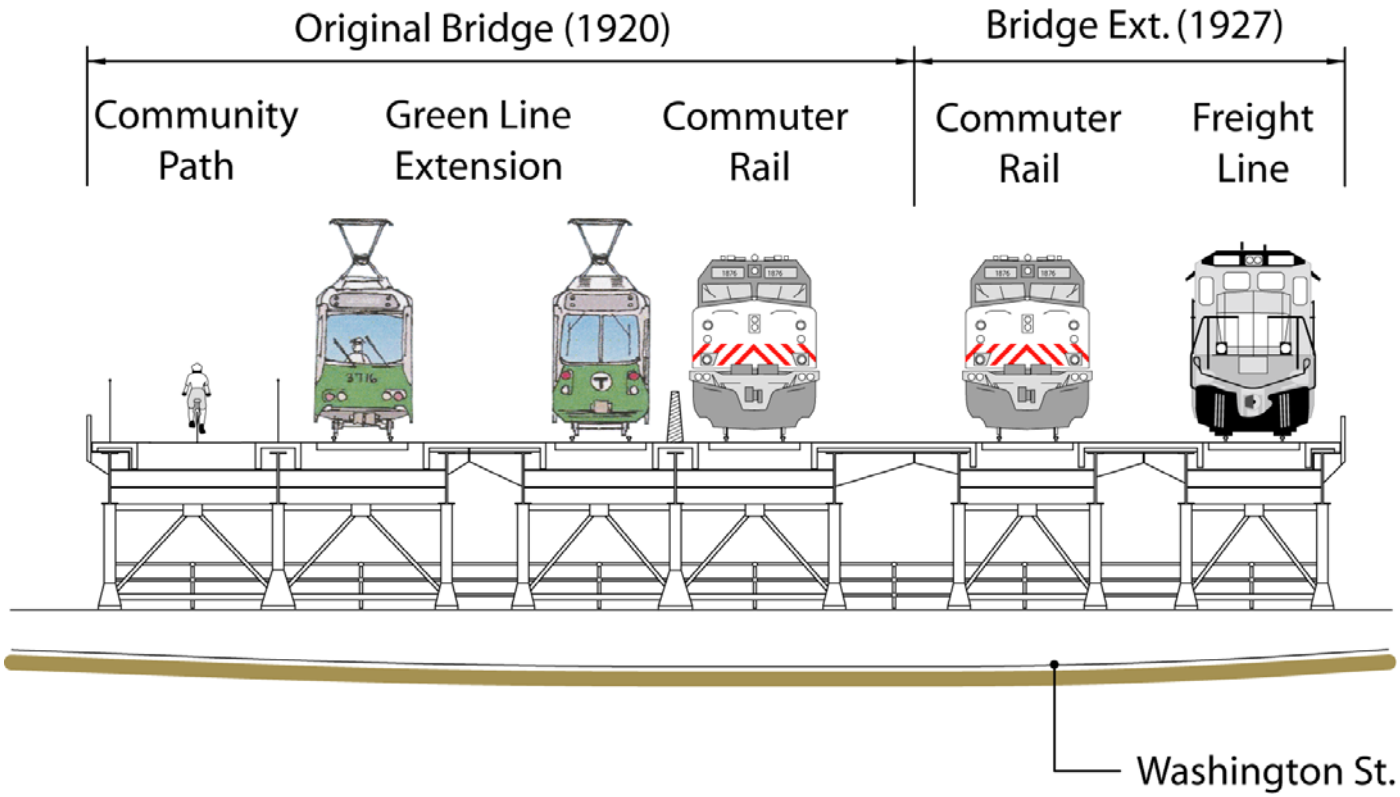
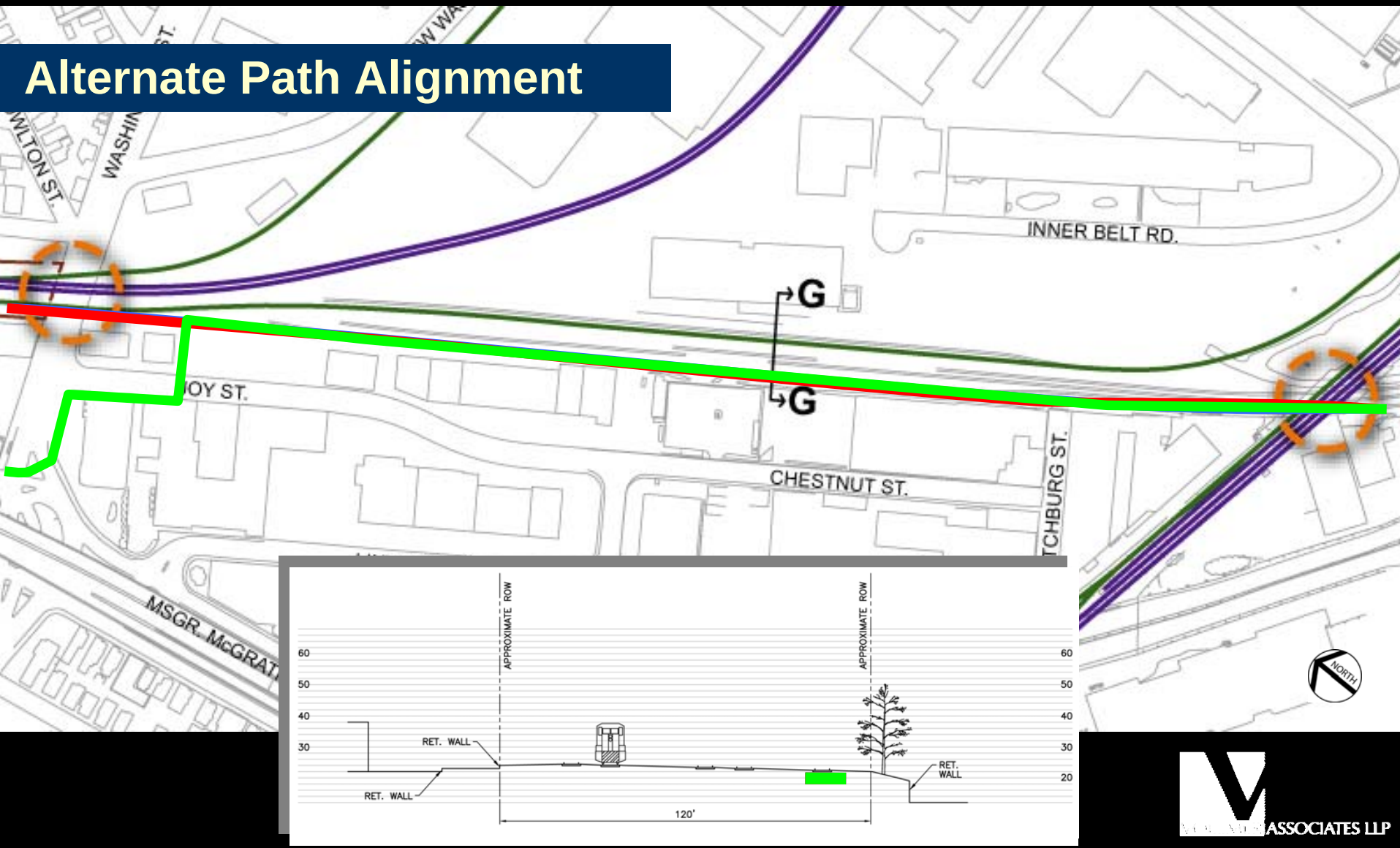
Washington Street Bridge



Project Segment No. 6

Project Segment No. 6

Alternate Path Alignment



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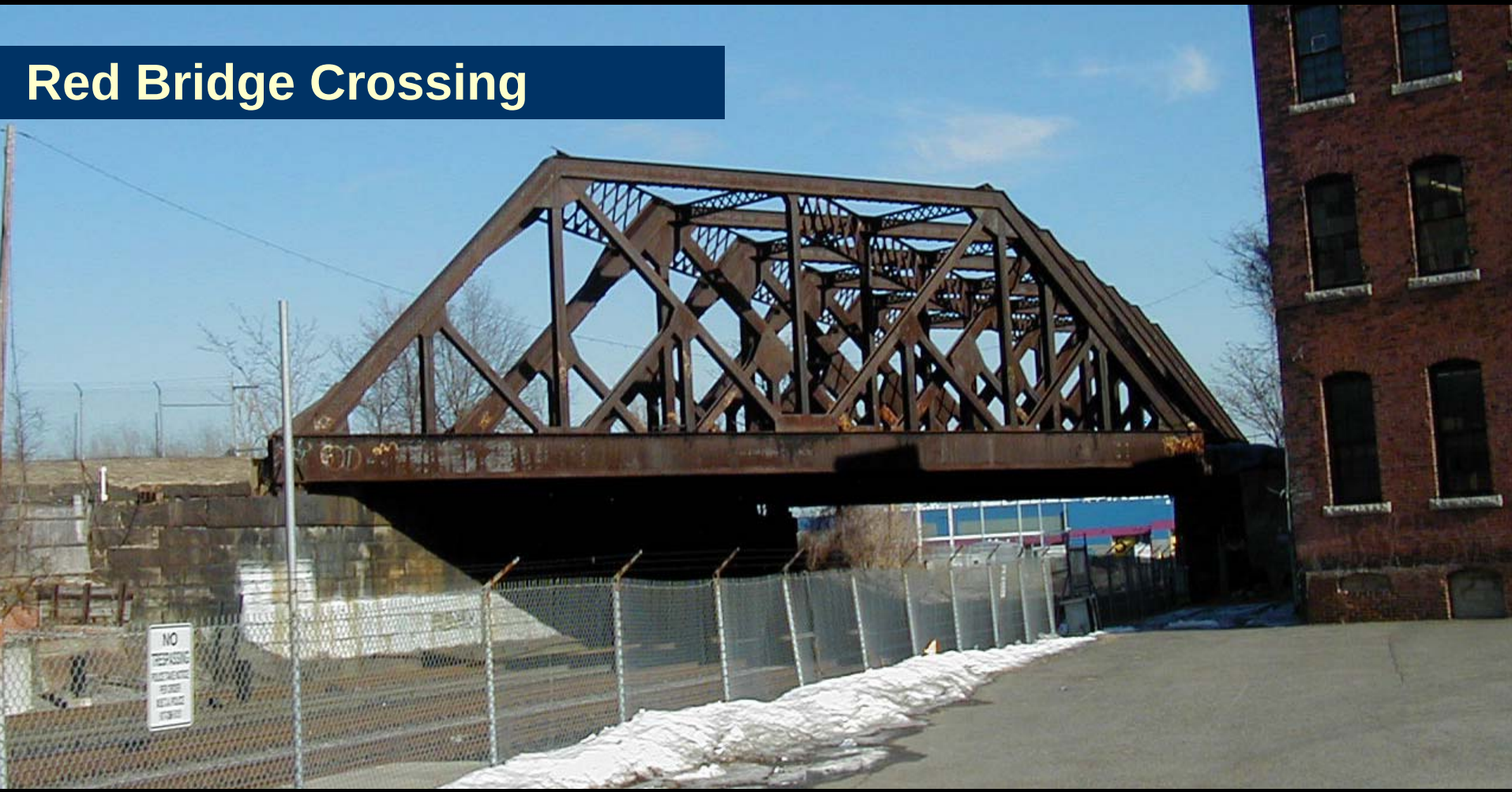
Red Bridge Crossing



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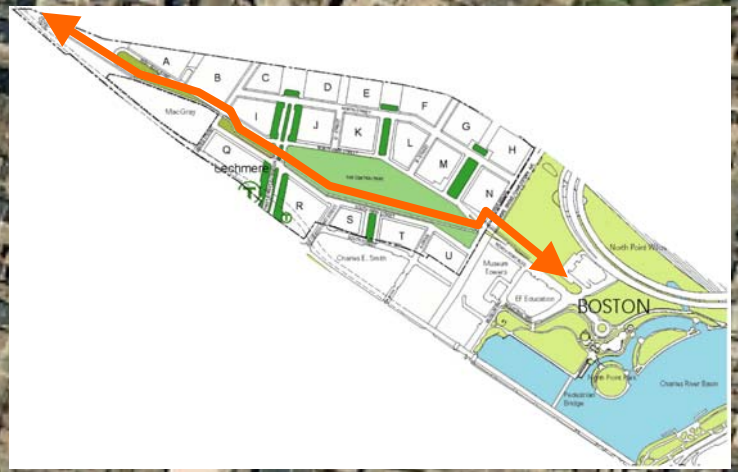
Project Segment No. 7



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Project Components

- Rail-with-Trail
- Dynamic Envelope
- Constrained Sections
- Fencing
- Crossings
- Walls

Project Type

- **Rail-with-Trail (RWT)**

  Any shared use path or trail located on or directly adjacent to an active railroad corridor.

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RWT Projects

- Regional Examples
  - Lowell Canal Trail
  - Southwest Corridor Park
  - Neponset River Trail
  - Blackstone River Bikeway, RI
  - Eastern Promenade Trail, ME

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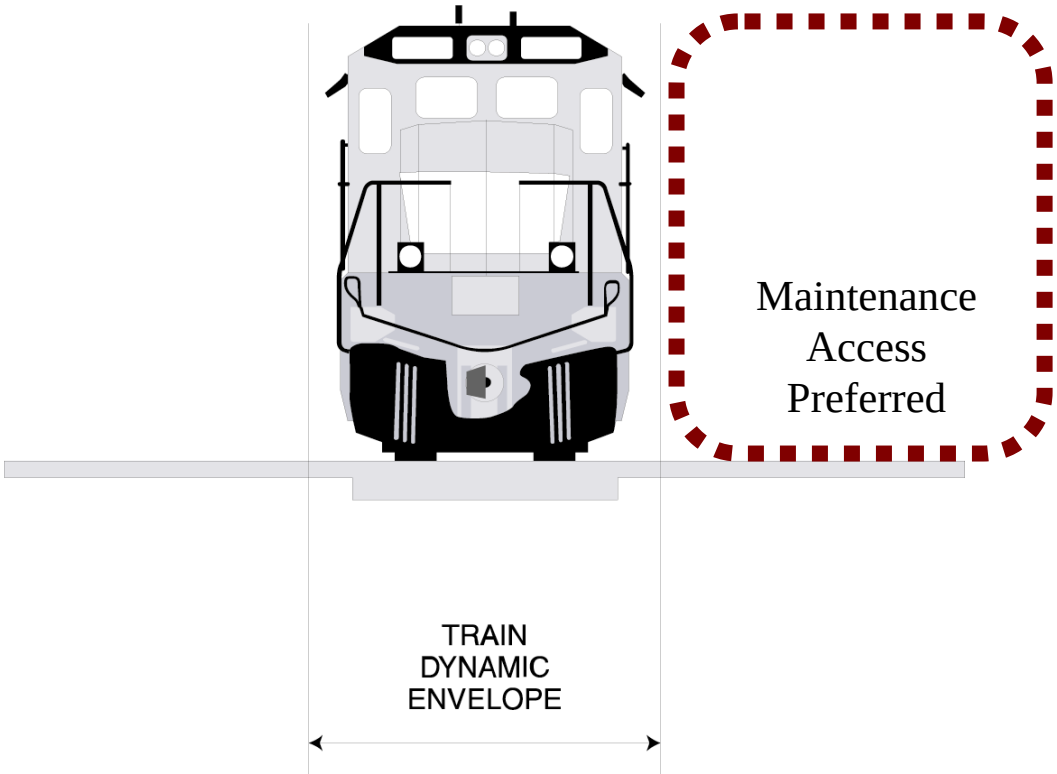
Dynamic Envelope Delineation



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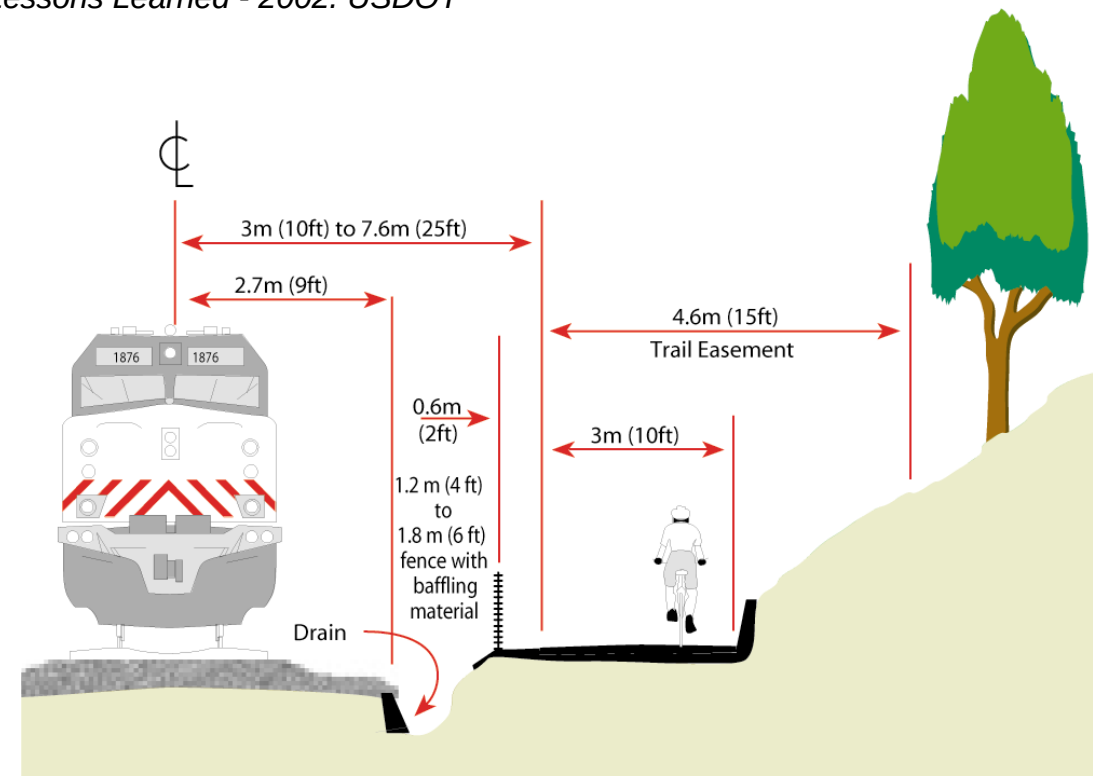
Constrained Sections

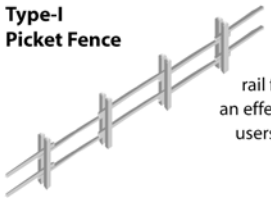
Source: Rails with Trails: Lessons Learned - 2002. USDOT



Fencing Styles

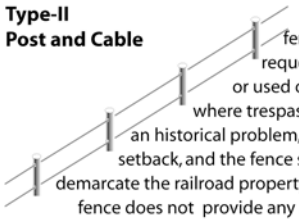
Source: Rails with Trails: Lessons Learned - 2002. USDOT

Type-I
Picket Fence



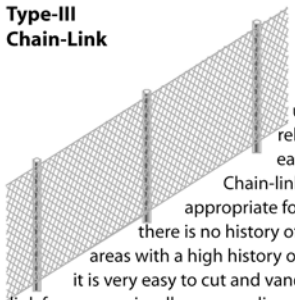
Where trespassing is not as much of a problem, a low wood rail fence can still serve as an effective reminder to trail users to stay off the tracks.

Type-II
Post and Cable



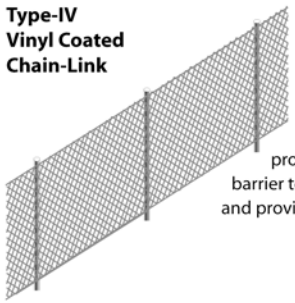
This inexpensive fence is occasionally requested by a railroad or used on a RWT primarily where trespassing has not been an historical problem, there is adequate setback, and the fence serves primarily to demarcate the railroad property boundaries. The fence does not provide any screening or anti-trespassing features.

Type-III
Chain-Link



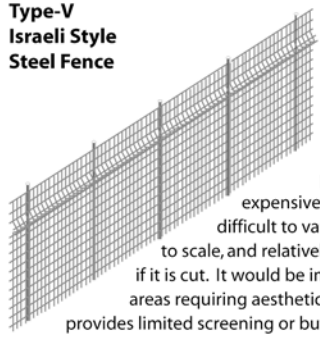
Chain-link fences are popular due to their effectiveness in keeping trail users off the tracks, relative low cost, and ease of maintenance. Chain-link fence may not be appropriate for rural areas where there is no history of trespassing, or for areas with a high history of trespassing, since it is very easy to cut and vandalize. Most chain-link fences are visually unappealing and tend to project an image of an urban industrial environment. For this reason, trail designers should explore using other, more appealing types of fences whenever possible.

Type-IV
Vinyl Coated
Chain-Link



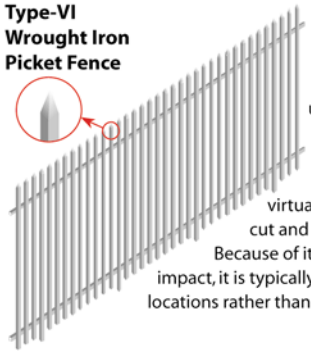
Similar to Type II, but with either a plastic woven fabric or wood battens in the chain-link material providing a solid-type barrier to help catch debris and provide wind and visual buffering.

Type-V
Israeli Style
Steel Fence



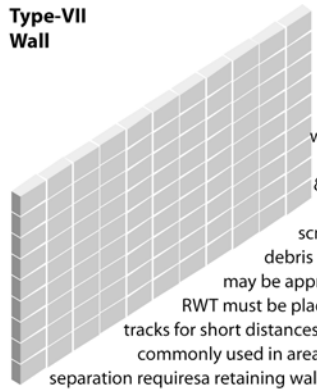
Sometimes referred to as "israeli-style" fencing for its use in Israel to protect kibbutzs, this product is more expensive than chain link, difficult to vandalize, difficult to scale, and relatively easy to repair if it is cut. It would be inappropriate for areas requiring aesthetic treatment, and provides limited screening or buffering benefits.

Type-VI
Wrought Iron
Picket Fence



This is the ultimate in vandal resistant fencing, and is used in locations that have a history of trespassing. It is virtually impossible to cut and difficult to scale. Because of its cost and visual impact, it is typically used at specific locations rather than along the entire corridor.

Type-VII
Wall



Very rarely used due to its cost and visual impact, solid concrete block walls are virtually indestructable & offer complete buffering and screening from rail debris or trains. A wall may be appropriate where a RWT must be placed very close to tracks for short distances. Walls are most commonly used in areas where a grade separation requiresa retaining wall adjacent to the trail. Wall design in active rail corridors should be carefully coordinated with rail engineers, because they can have an effect on the structural integrity of the rail bed, alter drainage patterns in the rail corridor, and, in some circumstances, impede railroad access by railroad maintenance equipment.

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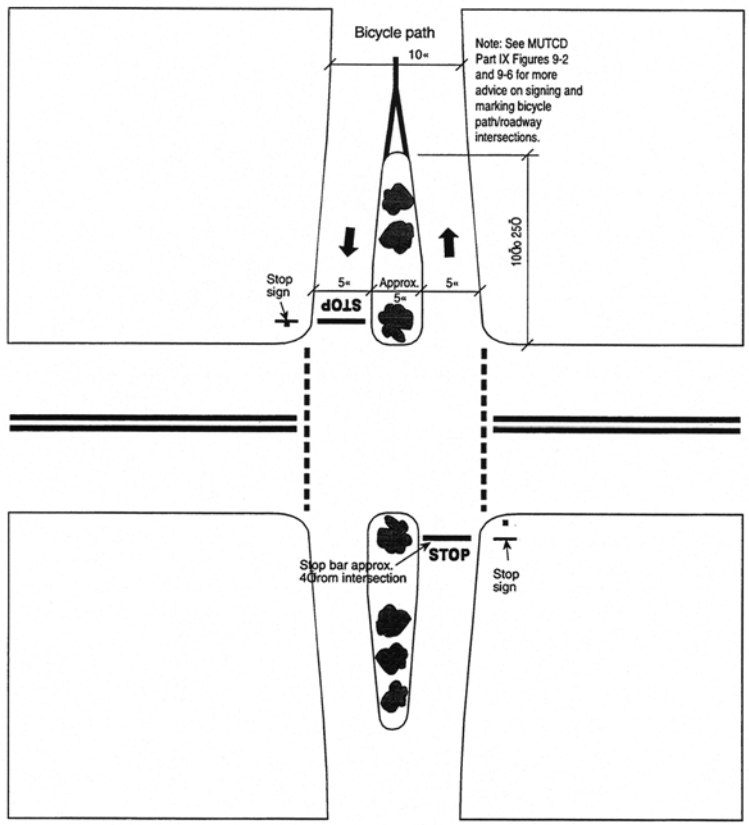
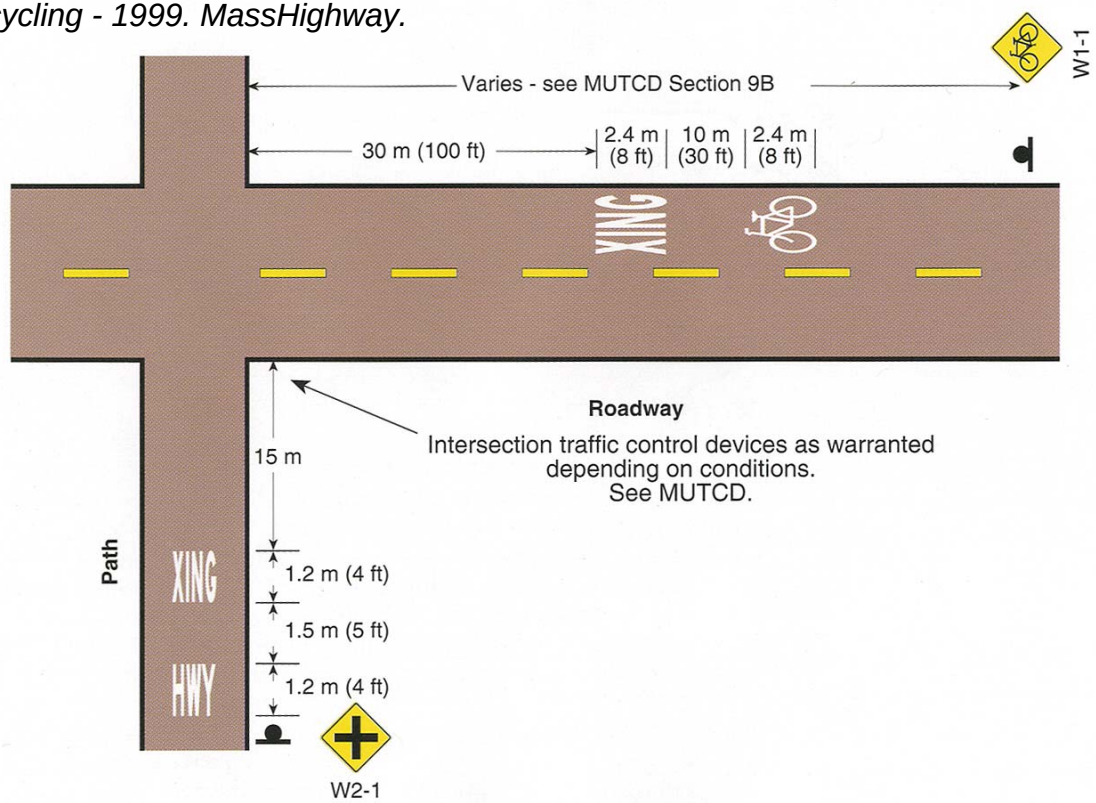
Road Crossing

Source: Building Better Bicycling - 1999. MassHighway.



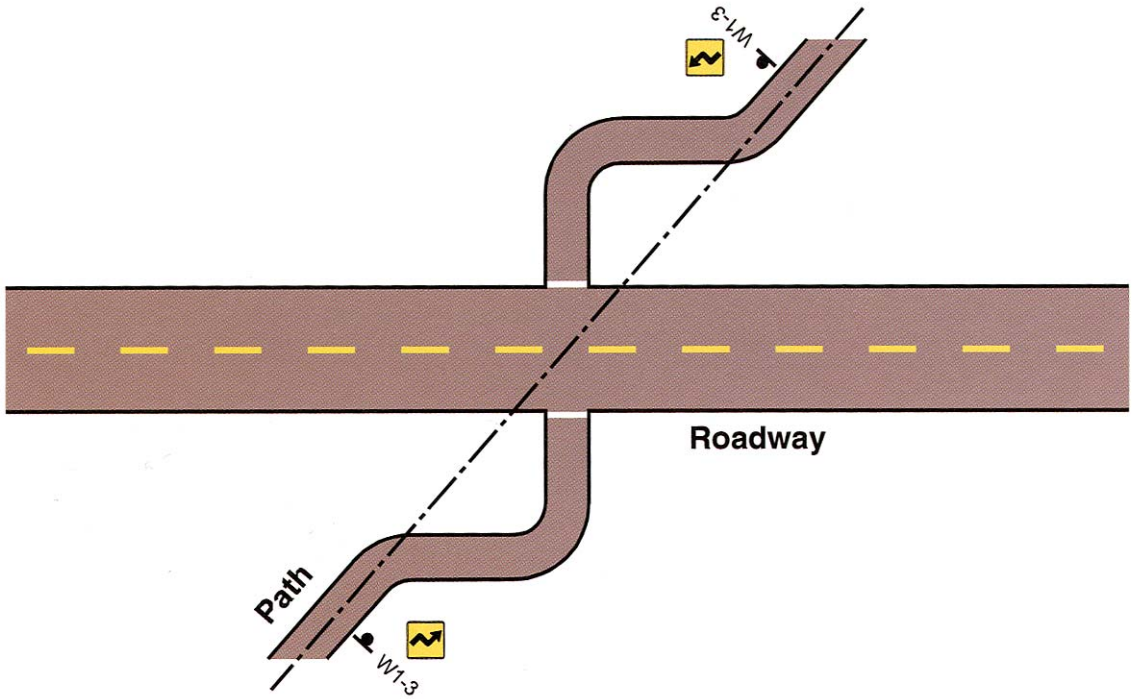
Midblock Path Crossing

Source: Building Better Bicycling - 1999. MassHighway.



Diagonal Road Crossing

Source: Building Better Bicycling - 1999. MassHighway.



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Road Crossing

Road Crossing

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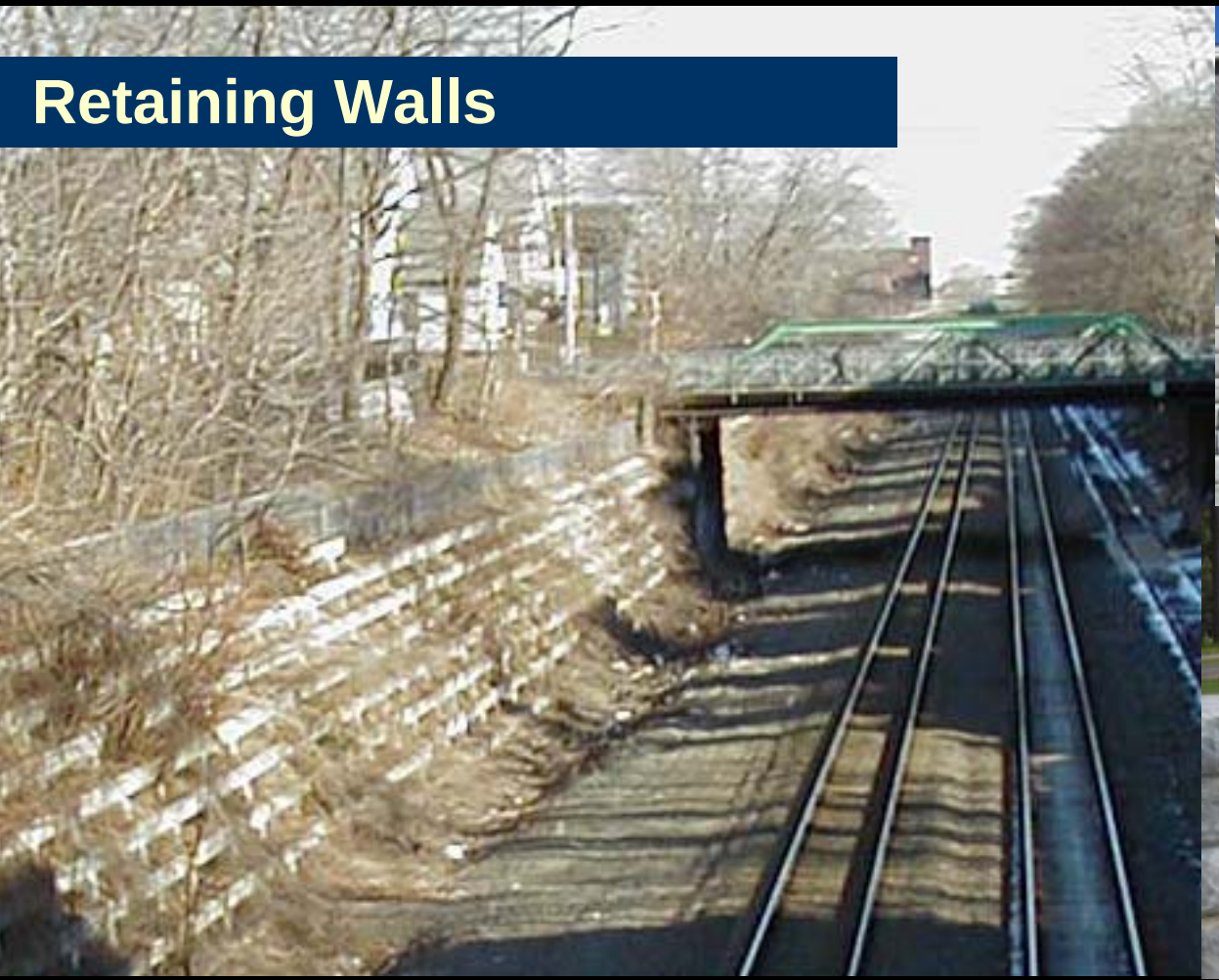
Retaining Walls



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Alternate Analysis

- Alternate 1
- Alternate 2
- Alternate 3
- Alternate 3 Modified

Concept: Pros / Cons

	Pros	Cons
Alternate #1		
	low impact to railroad R.O.W. short term ability to construct	indirect route street crossings (8) poor vertical/horizontal alignment walls / easements new pedestrian bridge (1)
Alternate #2		
	moderate impact to Railroad R.O.W. Improved alignment	bridge modifications (2) street crossings (2) new pedestrian bridge (2) walls / easements
Alternate #3		
	preferred alignment coordinates w/ greenline extension shared costs	requires portion of railbed bridge work (2) new pedestrian bridge (1) walls / easements

Alternate #1

ALTERNATE #1

Segment	Project Type	Length (ft)	Unit	Unit Cost	Total Cost
School Street	At-grade crossing	50	LF	200	$10,000
Segment 1	Bottom of embankment, access road	720	LF	500	$360,000
Medford Street	At-grade crossing	130	LF	200	$26,000
Segment 2	Along embankment	450	LF	2000	$900,000
Walnut Street	At-grade crossing	50	LF	200	$10,000
Segment 3	Along embankment, transition down	900	LF	2000	$1,800,000
McGrath Highway	At-grade crossing	150	LF	100	$15,000
Segment 4	Transition up, top of embankment	500	LF	2000	$1,000,000
Cross Street	At-grade crossing	200	LF	200	$40,000
Segment 5	Sidewalk/path combination	700	LF	100	$70,000
Washington Street	At-grade crossing	110	LF	200	$22,000
Segment 6	Use railbed	2850	LF	100	$285,000
Fitchburg Line	New bridge over R.R.	135	LF	1500	$202,500
Segment 7	Use railbed	470	LF	100	$47,000
Total		7415			$4,787,500

Alternate #2

ALTERNATE #2

Segment	Project Type	Length (ft)	Unit	Unit Cost	Total Cost
School Street	At-grade crossing	50	LF	200	$10,000
Segment 1	Along embankment	720	LF	2000	$1,440,000
Medford Street	New Box Culvert	130	LF	6000	$780,000
Segment 2	Along embankment	450	LF	2000	$900,000
Walnut Street	At-grade crossing	50	LF	200	$10,000
Segment 3	Along embankment, transition down	900	LF	2000	$1,800,000
McGrath Highway	Underpass	150	LF	200	$30,000
Segment 4	Transition up, top of embankment	500	LF	2000	$1,000,000
Cross Street	At-grade crossing	60	LF	200	$12,000
Segment 5	Elevated structure	820	LF	4000	$3,280,000
Washington Street	Elevated structure	80	LF	4000	$320,000
Segment 6	Use railbed	2480	LF	100	$248,000
Fitchburg Line	New bridge over R.R.	135	LF	1500	$202,500
Segment 7	Use railbed	470	LF	100	$47,000
Total		6995			$10,079,500

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Alternate #3

ALTERNATE #3

Segment	Project Type	Length (ft)	Unit	Unit Cost	Total Cost
School Street	At-grade crossing	50	LF	200	$10,000
Segment 1	Along embankment	720	LF	2000	$1,440,000
Medford Street	New Box Culvert	130	LF	6000	$780,000
Segment 2	Along embankment	450	LF	2000	$900,000
Walnut Street	New Box Culvert	50	LF	6000	$300,000
Segment 3	Transition out into railbed	900	LF	750	$675,000
McGrath Highway	Relocate freight, use railbed	150	LF	550	$82,500
Segment 4	Relocate freight, use railbed	500	LF	550	$275,000
Cross Street	Relocate freight, use railbed	60	LF	550	$33,000
Segment 5	Relocate freight, use railbed	820	LF	550	$451,000
Washington Street	Use rail bridge	80	LF	400	$32,000
Segment 6	Use railbed	2480	LF	100	$248,000
Fitchburg Line	New bridge over R.R.	135	LF	1500	$202,500
Segment 7	Use railbed	470	LF	100	$47,000
Total		6995			$5,476,000

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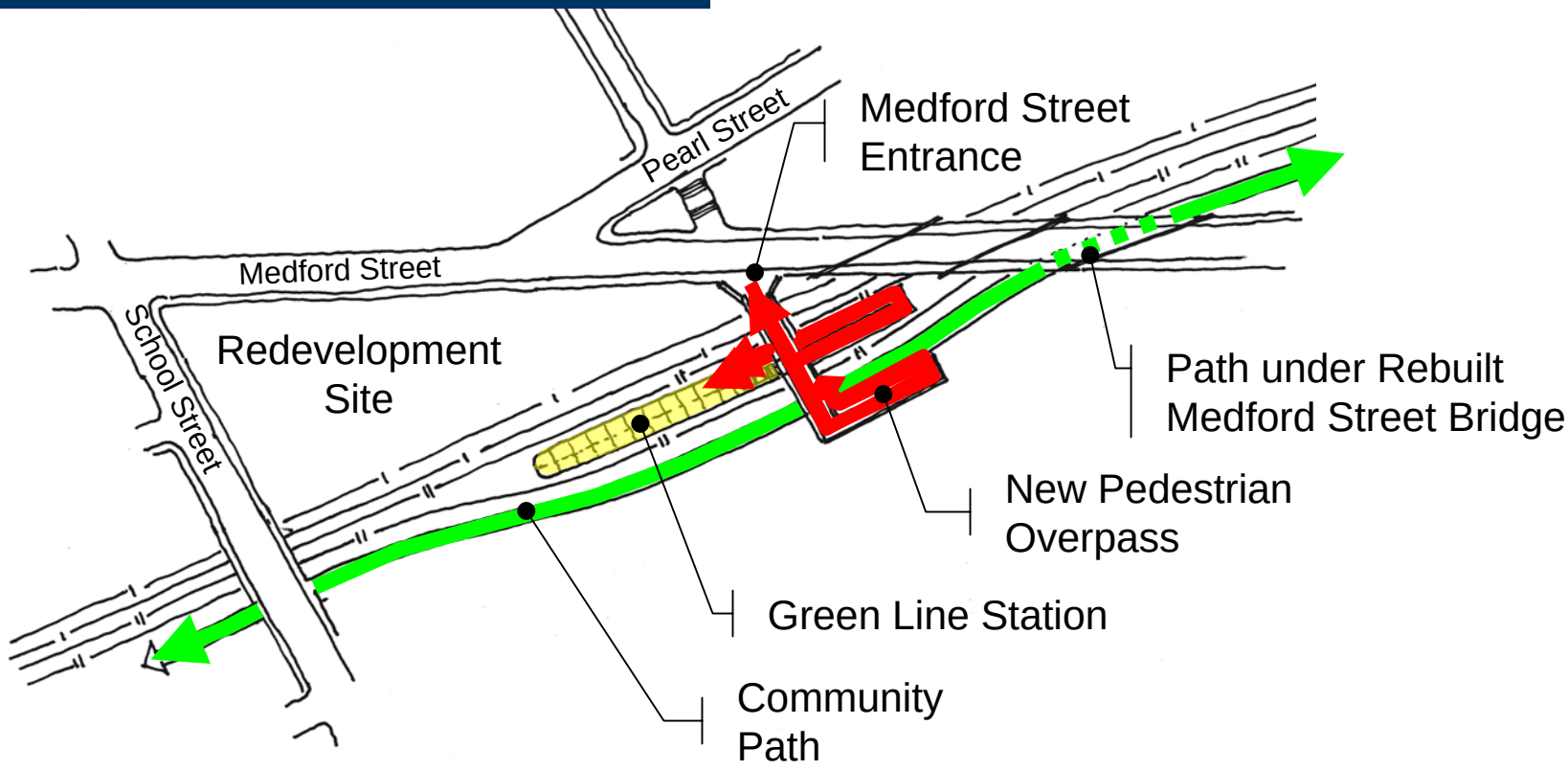
Alternate #3 modified

ALTERNATE #3-Modified

Segment	Project Type	Length (ft)	Unit	Unit Cost	Total Cost
School Street	At-grade crossing	50	LF	200	$10,000
Segment 1	Along Gillman Station (shared cost*)	720	LF	1000	$720,000
Medford Street	New Bridge (shared cost*)	130	LF	6000	$780,000
Segment 2	Along embankment	450	LF	2000	$900,000
Walnut Street	New Bridge (shared cost*)	50	LF	6000	$300,000
Segment 3	Use railbed*	900	LF	200	$180,000
McGrath Highway	Use railbed*	150	LF	200	$30,000
Segment 4	Use railbed*	500	LF	200	$100,000
Cross Street	Use railbed*	60	LF	200	$12,000
Segment 5	Use railbed*	820	LF	200	$164,000
Washington Street	Use rail bridge	80	LF	400	$32,000
Segment 6	Use railbed	2480	LF	100	$248,000
Fitchburg Line	New bridge over R.R.	135	LF	1500	$202,500
Segment 7	Use railbed	470	LF	100	$47,000
Total		6995			$3,725,500

*New Gillman Square Station, Medford St. / Walnut St. bridge replacements and freight track relocation completed as part of Green line extension to Medford.

Alternate #3 modified



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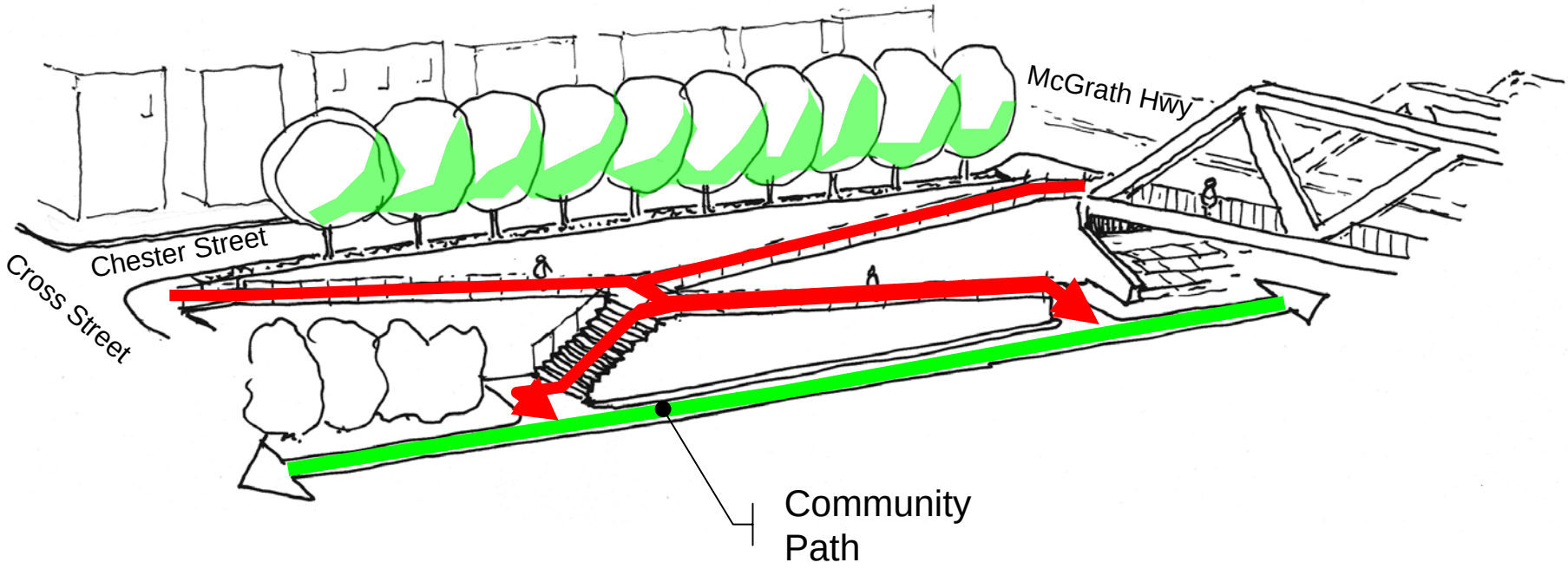
Alternate #3 modified



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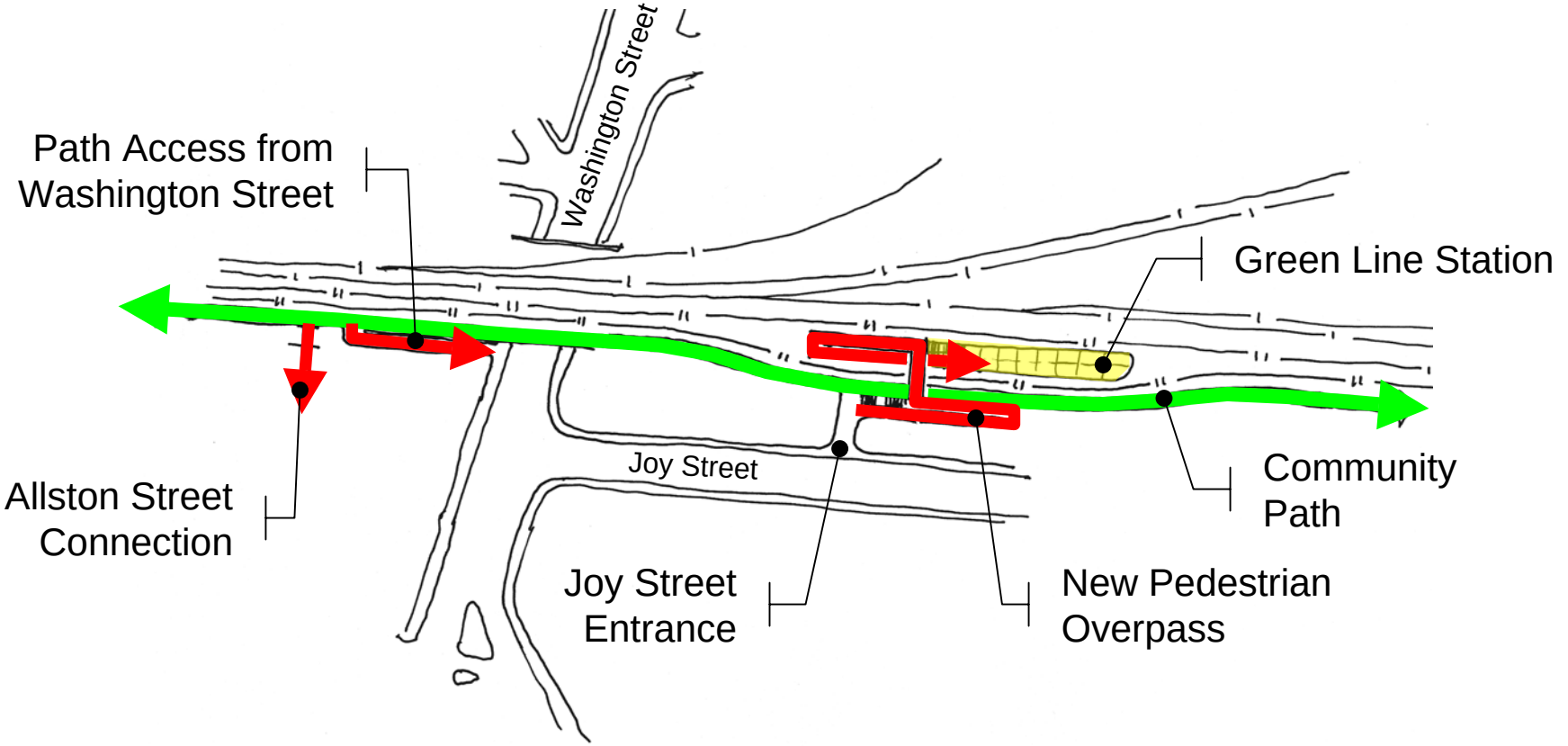

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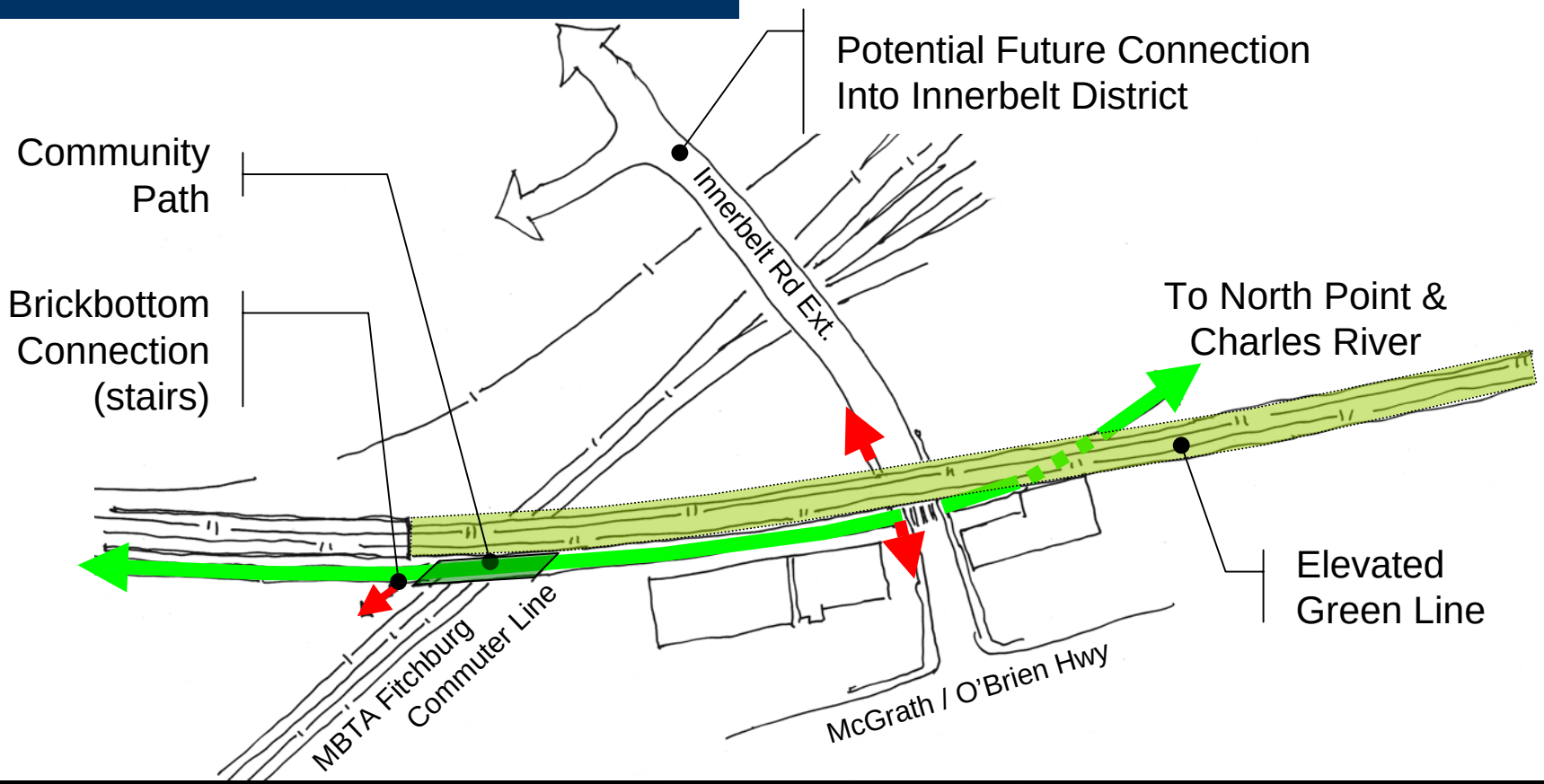
Alternate #3 modified



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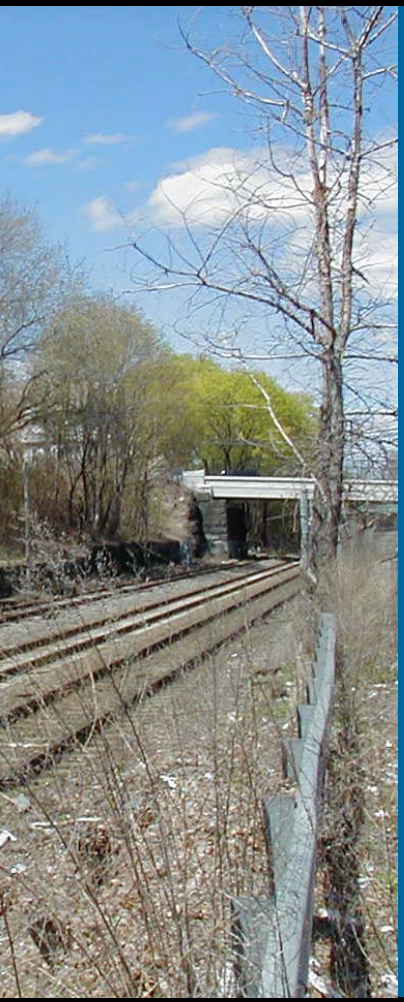
Preliminary Conclusions

- Alternate #3-modified is preferred
- Green Line Extension and Path are mutually beneficial
  - Path provides access to stations
  - Path provides emergency/maintenance access potential
  - Path construction occurs with Green Line
  - Bridges rebuilt as part of Green Line Extension
  - Stations provide greater use of path
  - Shared costs
- Alternate #2 provides fall-back options



Questions

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